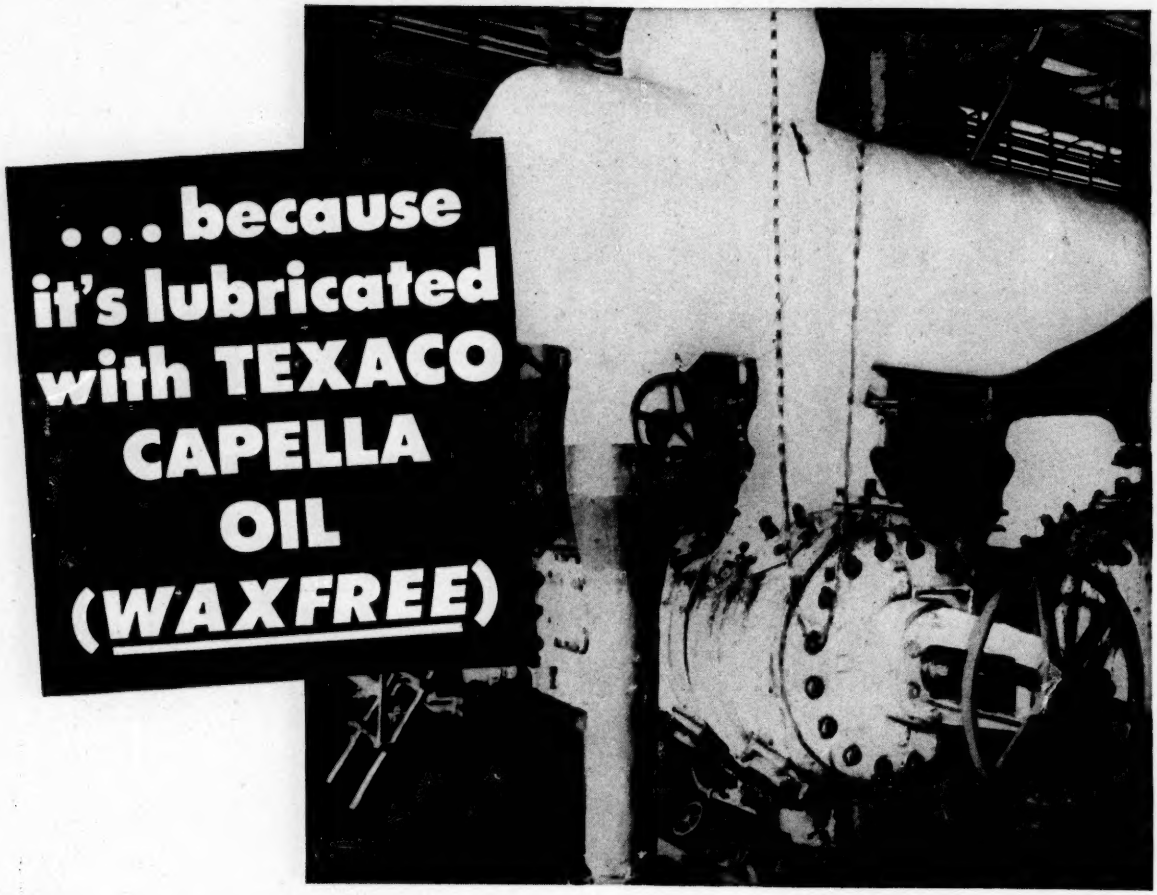
ICE and REFRIGERATION

Tennessee Ice Plant Uses Space For Quick Freezing . . . Page 11

JANUARY • 1953

Review of Ice and Refrigerated Warehousing . . Pages 23 and 24

STAYS CLEAN



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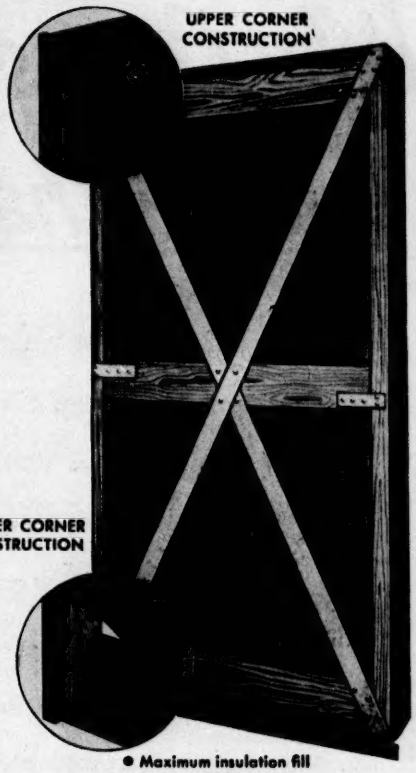
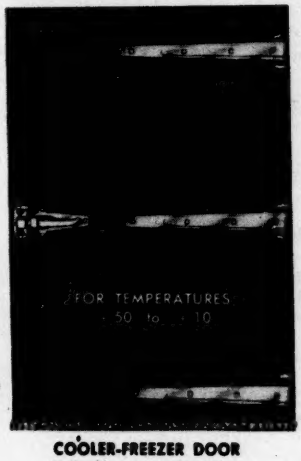
REFRIGERATOR DOORS BUILT IN THE WORLD

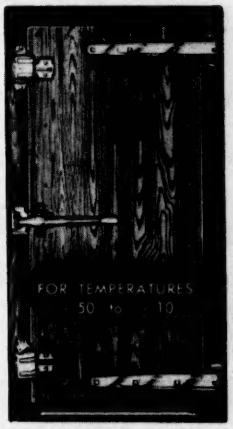
UPPER CORNER CONSTRUCTION



LOWER CORNER CONSTRUCTION

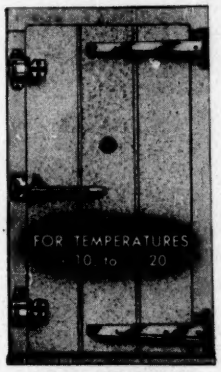


COOLER-FREEZER DOOR
- Modern streamlined job
- 100% "Douglas Fir"
- Sanitary hardware



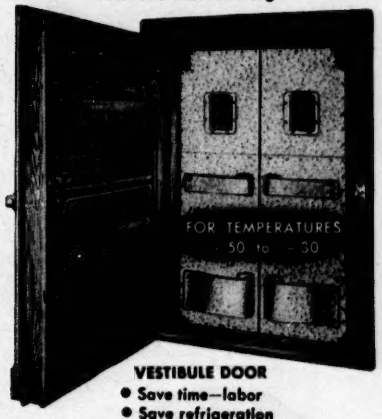
X-52 PLYWOOD PANEL DOOR
- Plywood front and back
- Extra heavy-duty hardware
- Special type gaskets

- Maximum insulation fill
- Most possible rigidity
- Allows reversal of swing



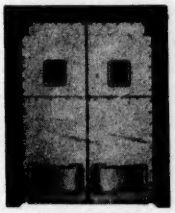
LOW TEMPERATURE DOOR
- Entire metal-clad front
- Extra heavy-duty hardware
- Special type gaskets

SUPER FREEZER (OVER-LAP) DOOR
- Extra-heavy construction
- Extra-heavy duty gaskets
- Extra heavy-duty hardware

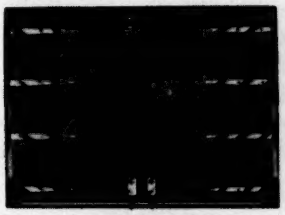


VESTIBULE DOOR
- Save time—labor
- Save refrigeration
- Large plant operation

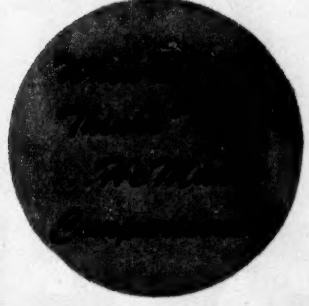
TRACK DOOR
- For abattoirs
- Meat handling rails
- Banana rooms



AUTO-CLOSE DOOR
- For loading dock
- Intra-cooler doors
- Heavy trucking



DOUBLE DOOR
- For palletizing
- For carloading
- For elevator shafts



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When you see a pipe repair job in progress, the economy of using durable material becomes obvious. Original installations are quickly made by pipe fitters. But repairs call for hours of work by as many as five crafts: pipe fitter , mason , carpenter , plasterer , painter .

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TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

ICE and Refrigeration

VOLUME 124 NUMBER 1

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January, 1953

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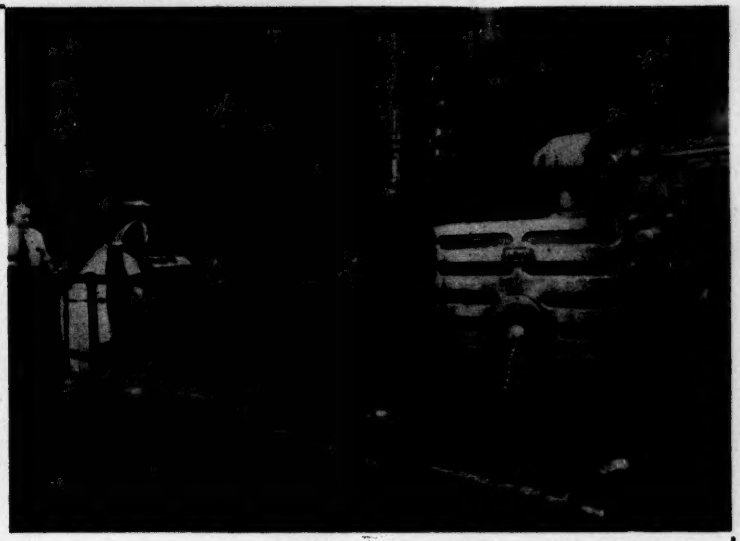
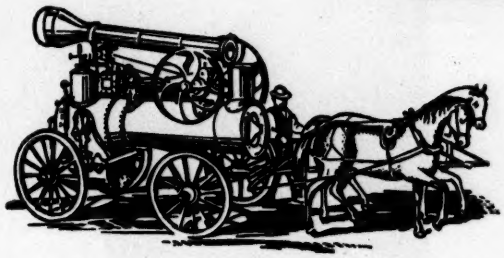


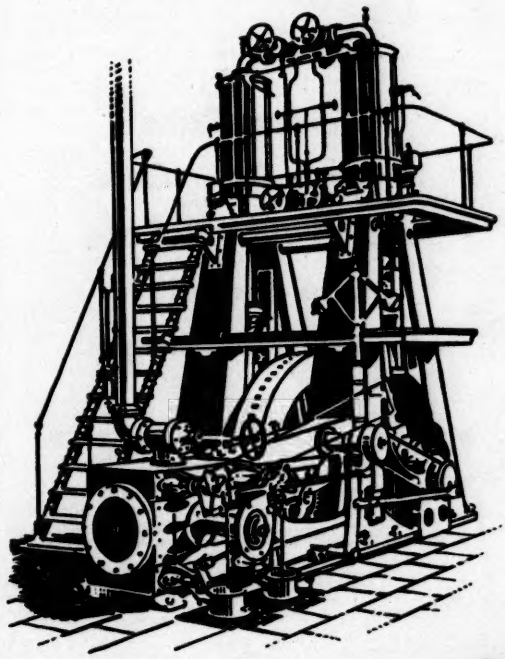


This portable engine still runs after 72 years' active service.

The portable steam engine shown at left was operated in Virginia from 1872 to 1949: the Corliss type above, built in 1891, is still running at Irwin, Penna. Another Frick Corliss, shipped in 1888, is still going strong at Weldon, North Carolina.

Frick Company was established a century ago for making engines and farm machinery. For over 70 years it has pioneered in building refrigerating and air conditioning systems. Frick compressors commonly achieve service records of 40 years; many have run 50; some even 60!

The whole story of Frick equipment is told, with 200 illustrations, in the Centennial History just published: send $1 for your copy. And get estimates now on the cooling system you need.

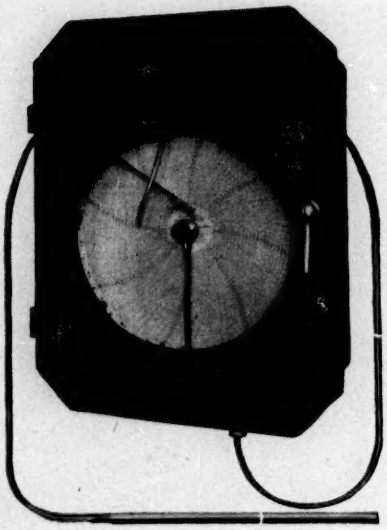


Modern Frick refrigerating machines have many advantages over this open type built in the 1880's.

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA. U.S.A.



Locker Room Story

TAYLOR'S Locker Room Recording Thermometer is on duty around the clock. It gives you an accurate, continuous report of the temperature inside your locker room, from a convenient point *outside* the room. You'll have a permanent, indelible, degree-by-degree, seven day temperature record from the instant the instrument is put in operation.

Here's protection for you, in the irrefutable evidence of temperature maintained, in case of damage claims: protection for your customers, who can assure themselves at a glance that their foods are kept safely.

Thanks to Taylor's exclusive Accuratus connecting tubing the instrument may be placed as far as 100 ft. away from the highly sensitive temperature bulb, without effect from varying temperatures through which the tubing passes. The case is moisture proof and corrosion resistant. 12" charts, graduated in degrees and hours, can be changed in a matter of seconds.

For full information on this and other Taylor refrigeration control systems, consult your Taylor Field Engineer, or write for **Catalog 300.** Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

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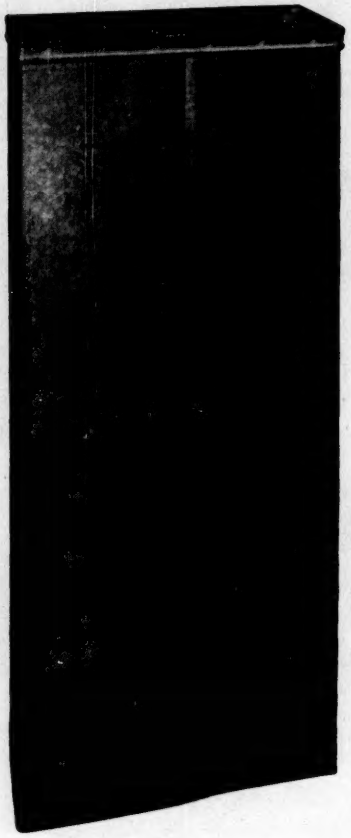
ACCURACY FIRST

IN HOME AND INDUSTRY



Welded Cans
Integral Tube Cans
Arctic Pownall Cans
Can Baskets
Condenser Trough

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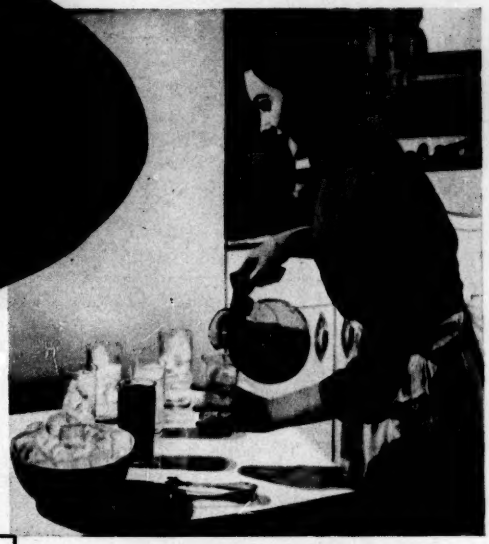
Industrial Trucks and Trailers

THE OHIO GALVANIZING & MFG. CO.
NILES OHIO

TAKE A TIP FROM A MAN WHO'S MADE IT PAY

Henry L. Dithmer
Executive Vice President
Polar Ice & Fuel Company
Indianapolis, Indiana



Henry L. Dithmer tells you why Polar Ice & Fuel Company prefers Union Ice Bags: "We bought our first paper bags from Union in 1932 and now use almost 400,000 a year. Naturally when it became apparent that the most improved method of merchandising prepared ice was in wet strength bags, we again turned to Union. Their bags are tops in quality and appearance, and always are fairly priced."

PACKAGE ice in wet strength paper bags and take advantage of the opportunity to suggest additional uses on the sides and back of the bag. Turn good customers into "best" customers.

PAPER-BAGGED ice looks cleaner, is cleaner, Sanitary container invites both family and commercial users to keep cubes and cracked ice more readily available, use it more often.

SELL your brand name and telephone on your paper ice bag. Encourage "impulse" buying, special orders for parties. Ice bag advertising costs practically nothing – pays off big.

WIN new customers through attractive appearance of the container and by word-of-mouth recommendation. It's good business to make a good impression on your customer's neighbors.

IT'S REALLY STACKED

with a **GIFFORD-WOOD**

ICE TIERING UNIT

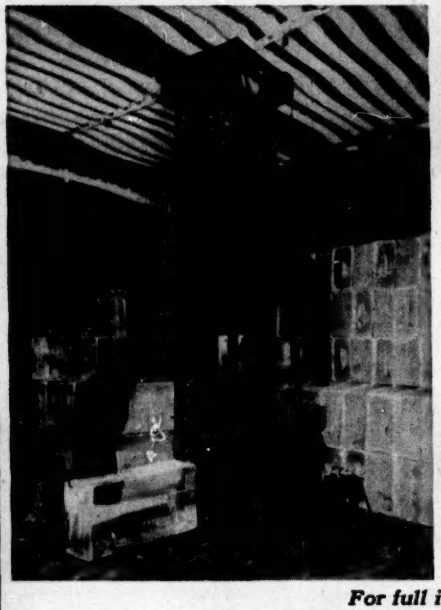
FAST · ACCURATE · ECONOMICAL

For maximum efficiency in ice-tiering operations, Gifford-Wood manufactures three compact, well engineered, portable ice-tiering units. They provide the full range of service needed to handle 300- and 400-lb. ice speedily and safely, in all plants from the largest to the smallest. Built to Gifford-Wood standards of durability.

One of these will exactly suit your requirements . . .

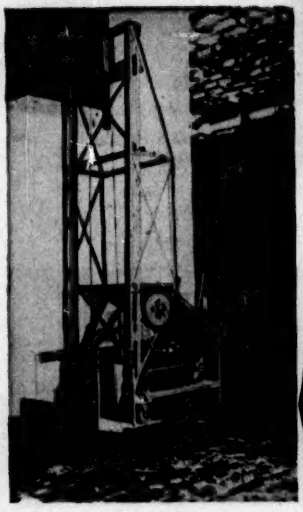
TYPE "LA"

An electrically operated (3 hp) automatic tiering machine for 300- and 400-lb. ice. Solenoid type holding brake and cut spur gears to drum shaft, speed 113 fpm, stack to 10 tiers. Complete with visual tier-finder, push-button control, plug and receptacle.



TYPE "N"

Identical in structural design to Type "LA", but motor, brake and winding drum are directly connected to enclosed worm gear reducing unit for compact power drive. Designed for ease of adjustment and accessability. Wired in accordance with Underwriters' specifications.



TYPE "QR"

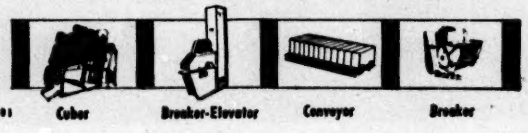
An electrically driven tiering unit for the smaller plant. Speed, approximately 50 fpm with 1 hp power requirement. Easily moved on two fixed casters by special lift-about attachment. Excellent durability with great portability.

For full information on any of these units have a Gifford-Wood representative call, or write for Bulletin 451.

GIFFORD-WOOD CO.

NEW YORK 17 — 420 Lexington Avenue — *Since 1814* — **HUDSON, N. Y.** — **CHICAGO 6** — 565 W. Washington St.

Pacific Coast Representative: Western Ice Equipment Company, 420 Market St., San Francisco 11



In the Spotlight

A TENNESSEE ICE Producer meets the problem of lowered ice volume by converting part of space for quick freezing. This service is provided for vegetable growers in the vicinity. For description and pictures of the refrigeration equipment installed see page 11.

ONE OF THE LARGEST air conditioning installations was made in the International Ampitheatre, Chicago, in time for the two national political conventions in the summer of 1952. For complete description of this installation, see page 14.

SCALE CONTROL and scale removal was discussed in a paper at a recent Chicago Chapter, NAPRE, meeting by D. R. Walzer, District Manager, Wright Chemical Corp., Chicago. His discussion applied to evaporative condensers and water towers in refrigeration plants. See page 45.

THE ANNUAL SURVEY of the ice industry, starting on page 23 presents, on the whole, an optimistic picture for 1952 business and a favorable outlook for 1953, as reflected by leading ice producers from representative sections of the country.

SANITARY ICE continues as a problem in the ice industry, especially to those who sell processed ice to eating establishments. They will be interested in a report on this subject by the Engineering and Research Department of the National Association of Ice Industries. See page 28.

THE AMERICAN Society of Refrigerating Engineers at its annual meeting in New York City November 30 to December 3 presented a versatile program of technical and refrigerating subjects. For report of the meeting, see page 56.

COVER PICTURE: Part of the production room of the new Sealtest ice cream plant, pittsburgh, as installation of new equipment neared completion. Projecting from the tile wall at right are the six 3,000-gallon cold-wall storage tanks for pasteurized ice cream mix held at 34 degrees. Two 200-gallon flavoring vats are located on the floor at extreme right. In the right foreground are the stainless steel floor escutcheons shielding pipelines ready for connection to four 150-gallon freezers. Three 400-gallon and five 200-gallon freezers already installed can be seen farther down the row (extreme left).

THE ANNUAL report on cold storage holdings shows a substantial increase of many commodities over last year and the five year average. Holdings for each month of the year are shown in the report on page 41.

THE REFRIGERATED Warehousing industry had a good year during 1952, according to the annual survey of ICE AND REFRIGERATION, starting on page 23. Occupancy was up and freezer space was in such demand as to call for considerable conversion from cooler to freezer and addition of new space.

A BIENNIAL survey of the capacity of refrigerated warehouses in the United States as of October 1, 1951 shows total capacity of 711 million cubic feet, a gain of 10 million cubic feet over 1949, date of last survey. For other details see page 17.

THE DRESSED MEAT trade in Ireland has been increased by the use of modern refrigeration to the extent that it has greatly reduced dependence on the United Kingdom. For details, see the article on page 54.

60 Years Ago

From the January 1893 Issue of ICE AND REFRIGERATION

FOR THE COLUMBIAN Exposition, Chicago's World's Fair of 1893, the Fred W. Wolf Company contracted to supply Waukesha Spring drinking water, piped from the springs at Waukesha, Wisconsin, about 100 miles from the fair grounds, and delivered to 300 or more drinkfountains distributed over the grounds. The water was to be cooled in a refrigerating plant in the Transportation Building, the cooling plant consisting of two 50-ton Linde machines made by the Fred W. Wolf Company, driven by two Hamilton Corliss engines.

THE ESTABLISHMENT of depots for dressed meats in all the larger cities and towns by the great packers of Chicago, Kansas City, and the West is working considerable change in the local butcher business. ICE AND REFRIGERATION suggests that in one respect the change is beneficial in that the consumer has better meat on his table. Nothing is more rare in a country town where the meat consumed is killed at home than a tender piece of beef . . . Very "ornery" beef on the hoof at the packing house becomes very palatable beef on the block after hanging a week or more in the cooling room.

NOW THAT there is so much diptheria about it is interested to refer to what is known as the "ice treatment," which is used and advocated by some of the highest medical authorities in this country and abroad. The ice treatment consists in applying ice externally and internally, sufficiently long to abort all bacterial growth by reason of the reduced temperature produced. The ice pack is applied externally to the neck, pieces of ice are left to dissolve constantly in the mouth, and the tongue, throat, and contiguous parts are sprayed with ice water. It should be followed for from twenty-four to thirty-six hours without intermission, after which a pause may ensue of an hour or two.

THE CITY COUNCIL of Oxford, Ohio, confronted by a resolution offering to build an ice house from which members of the Council and the poor people of Oxford were to receive ice free of cost, the august body laughed and tabled the "skit."

You check every part of an Alco Solenoid Valve in about two minutes. They can be completely dismantled without removal from the line. Remove coil and housing, open two cap screws and the valve is ready for examination and cleaning.

SIMPLE, ISN'T IT? And Alco Solenoids are packless, tight-seating, quiet. They're completely moisture-proof to eliminate coil burn-out. Alco Solenoids assure *easier servicing* for you and *longer service* for your customers.

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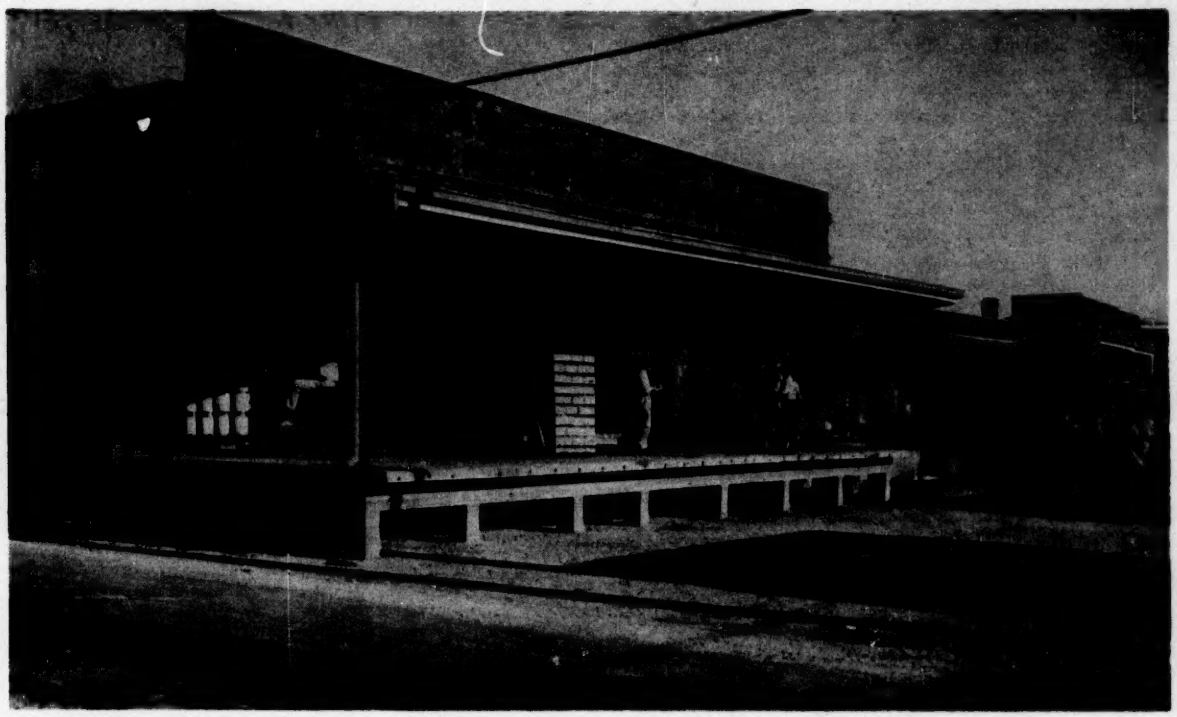


Front view and loading platform of Beare Ice & Coal plant at Humboldt, Tenn.

A NEW LIFE FOR THE ICE PLANT

Tennessee Ice Producer meets problem of surplus capacity by partially converting space for quick freezing service for vegetables. Merchandising and marketing help.

HARRY W. WALLING
Sales Engineering
York Corporation

THE aggressive ice man is very much on his toes these days and from several signs is going to win a long round of new profits in an allied field; the quick freezing industry.

Typical of the important changes being wrought in the ice industry is the Beare Ice and Coal Company, which has eight plants in West Tennessee. Until a few years ago the total amount of ice flow from these prospering plants averaged 100,000 tons annually. Today it's only 45,000 tons.

Mechanically refrigerated trucks, improved refrigerator railroad cars, rural electrification plus railroads diverting their re-icing points for cars freighted with perishables, accounted for this lowered volume in the ice business.

R. L. Beare, Jr., president of the Beare Ice and Coal Company, has wasted no time waiting for some miracle to revive his business. Endowed with a generous quantity of imagination, aggressiveness and resourcefulness the first thing Mr. Beare did was to survey his assets.

Established 60 Years Ago

Sixty years ago his father, the firm's founder, Col. R. L. Beare, installed a two ton ice plant at Humboldt, despite pessimism for such a venture being voiced by the community. Today the same ice plant has a daily capacity of 114 tons.

Later, with several plants located on the major railroad lines serving markets to the North and South, Col. Beare actively promoted the raising of cabbage, tomatoes, radishes, okra, limas, spinach and strawberries. This proved profitable, for the shipment of these farm goods required ice, ice in large quantities. He also erected seasonal storage houses throughout the territory.

With a sizeable investment and being in the heart of a rich, productive farming region, the colonel's son witnessed the farm produce his father had so actively promoted being trucked to cities as far away as Cincinnati, St. Louis and Louisville for quick freezing, as adequate freezing facilities were not available locally.

In June, 1950, Mr. Beare began investigating the possibilities for converting his properties into quick freezing plants, yet reserving sufficient space at his plants to maintain desired ice making capacities.

His survey pointed up that the Humboldt area was unquestionably the geographical center of strawberry and lima bean production. He decided to revamp his Humboldt ice plant into a quick freezing plant.

Installed Quick Freezing

Utilizing only the space formerly used as a cold storage facility, two tunnels were designed and built by

York Corporation engineers. Each has a capacity of 125,000 pounds per day based on strawberries being packed in 30 pound tins.

A holding freezer approximately 75 by 60 ft. and a tunnel room approximately 71 ft. square which would also serve as a low temperature holding room when not in use as a freezer comprised the first fast freezer conversion at Humboldt.

The design conditions were for minus 20 F in the freezer tunnels and 0 to minus 10 F in the holding rooms, all rooms being insulated with 8 inches of corkboard.

Equipment installed consisted of a 16 cylinder, high-speed York V/W 3¾x3 compressor and an 8 cylinder York V/W 6¾x5 booster compressor having a combined capacity of approximately 97 tons at a minus 35 F evaporator temperature.

The total coils installed in the two tunnels and two holding rooms consisted of approximately 40,000 lineal feet of 2-inch coil fed by three liquid ammonia recirculating pumps. Each tunnel was provided with two fans, each fan having a capacity of 30,000 cfm.

Ice Making Left Intact

The ice making capacity of the plant was left almost intact, and much ice from this plant will continue to be used in icing railroad cars and local consumption. It is believed that there will continue to be a large demand for ice in the Humboldt region.

After the Humboldt conversion got under way Mr. Beare decided to do something about the "too idle" plant at Jackson, Tenn. At this plant he had a season ice storage of no little size: 98 ft. long by 62 ft. wide by 30 ft. high. The problem was to put it, like Humboldt, on a profitable, productive basis.

With its present floor level 10 feet below dock level a problem was presented. Ice was raised and lowered to this level by an elevator. To convert to fast freezer lines meant either a two floor building with neither floor accessible to the dock without use of the elevator, or a one floor construction necessitating a 10-foot fill. The latter plan was selected.

One freezing tunnel was placed the length of the large storage room leaving the balance of the room for storage with a 20 ft. loft. Two former ice storage spaces which were 98 ft. long by 15 ft. wide by 10 ft. high were converted into holding freezers.

Equipment for the second Beare line of fast freezers is made up of two 16 cylinder York V/W 3¾x3 compressors acting as boosters, two ammonia pumps, two 30,000 cfm fans and 22,000 feet of 2-inch ammonia recirculating pipe coil. 5400 lineal feet of 2-inch coil on the ceiling of the present ice storage was converted to an ammonia recirculating system, and 3500 lineal feet of 1¼-inch coil in two holding freezers was converted to ammonia recirculation.

As at Humboldt, the ice making capacity of this plant—104 tons—was not affected because the compressor capacity from one of the other plants that had been shut down was transferred to the new fast freezer plant to assist on the 2nd stage load.

During conversion the advisability of installing low temperature rooms at ground level was questioned, as it had been said that possible damage to the building might result from the freezing of earth below the floor insulation.

Little authentic information on this subject is available. However, since both of the Beare fast freezer lines had by necessity to be constructed at ground level, the research department of the Armstrong Cork Company of Lancaster, Pa., was consulted. The result was that an elaborate ventilating system was installed at both freezer plants below the sub floor.

At the Jackson plant thermo couples were buried under the sub floor slab at levels ranging from 12 to 24 inches. Others were spotted at various places in the freezing room to facilitate accurate readings of soil temperatures.

Promotion Necessary

The Beare adventure into the fast freezing industry is as R. L. Beare, Jr., will more than likely tell, not without its risks. Conversion isn't the entire story. Promotion, merchandising and marketing as well as the assurance that there's more than a one season crop must be carefully considered.

Views in Beare Ice Plant, Partially Converted to Quick Freezing. →

1. This is a view of the engine room showing Brady Nelson and M. G. Hazelwood, chief engineer, checking operation of York vertical single acting refrigeration compressors, a 10 x 10 and an 8 x 8.

2. Zeno Bettis, who has been an employee of the Beare Ice & Coal Company since 1892 checks the operation of a York vertical single acting compressor at the company's Jackson, Tenn. plant.

3. Loading frozen vegetables by use of a lift truck at the Humboldt, Tenn. plant of the Beare Ice & Coal Company.

4. Judson Pace of the Beare Ice & Coal Company plant at Humboldt, Tenn. is placing a pallet load of 30-pound tins of strawberries into the freezing tunnel.

5. The freezer storage room at the Jackson, Tenn. plant of the Beare Ice & Coal Company. Elwood Kennedy, with high lift fork truck, is picking up two pallets of frozen vegetables.

6. J. W. Gilliam, vice-president of the Beare Ice & Coal Company is inspecting meat entering the freezing tunnel at the Jackson, Tenn. plant. This is a side view of the tunnel which is 98 feet long by 16 feet 6 inches wide by 6 feet high. It is located along the one side wall of a freezer storage room which is 98 feet long by 61 feet 6 inches wide by 22 feet 9 inches high.

7. The freezer storage at the Jackson, Tenn. plant of the Beare Ice & Coal Company. Elwood Kennedy with high lift fork truck is picking up two pallets of frozen strawberries in 30-pound tins.

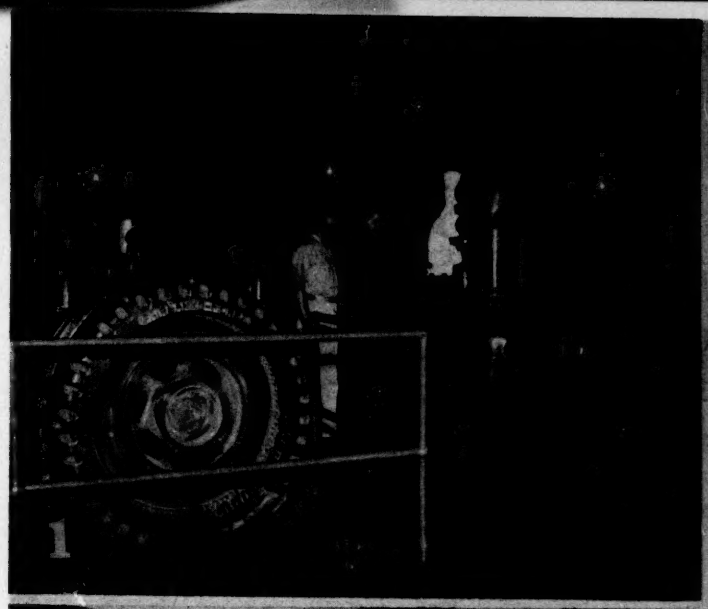
New Manual Tells How To Sell Meat on Ice

A COMPLETE manual, consisting of 64 mimeographed pages and cover has been issued on Meat-on-Ice. It was written by R. W. (Prof.) Davis, of the Union Ice Co., San Francisco, original exponent of the Meat-on-Ice Program and published by The National Association of Ice Industries, from whom copies are now available.

In the words of Prof. Davis, this manual contains everything that they have developed, or have heard about on this program. It is illustrated throughout with drawings and pictures and the text presents a clear and complete exposition of the subject.

It opens with a discussion of the problems of operating a meat market and tells how ice can be used to help meet refrigeration needs. Another section tells, with illustrations, how to make the installation, with detailed instructions of what to do, and how to avoid pitfalls. Selling the advantages of meat-on-ice is covered in another section and, finally, mechanical and other problems are discussed and answered.

Anyone interested in this latest means of opening up a new market for ice, will find this manual a great help, well worth the time it would take to study it carefully.



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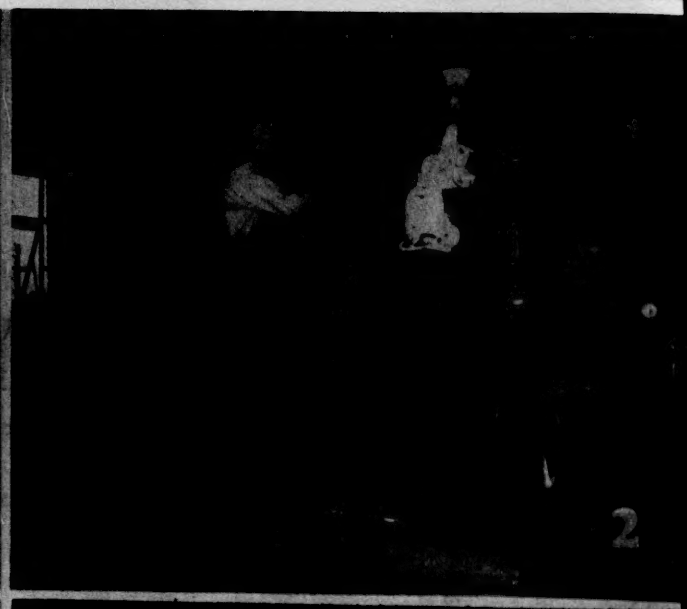

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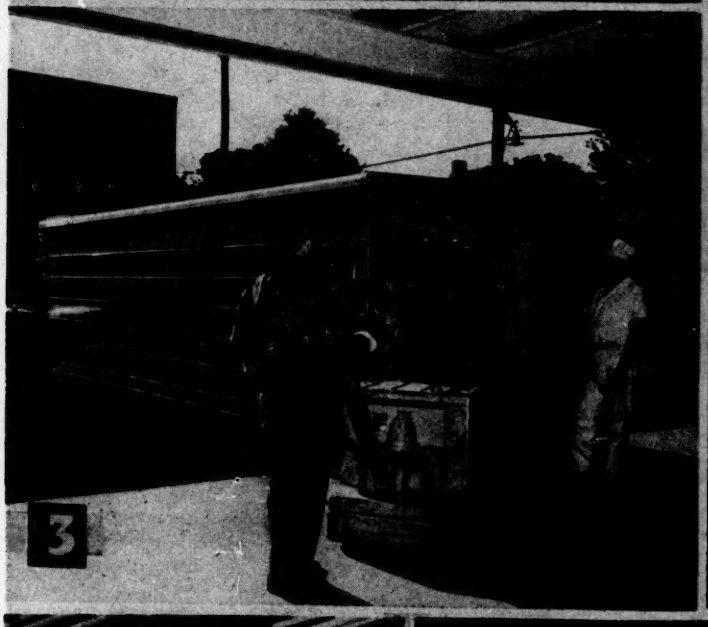

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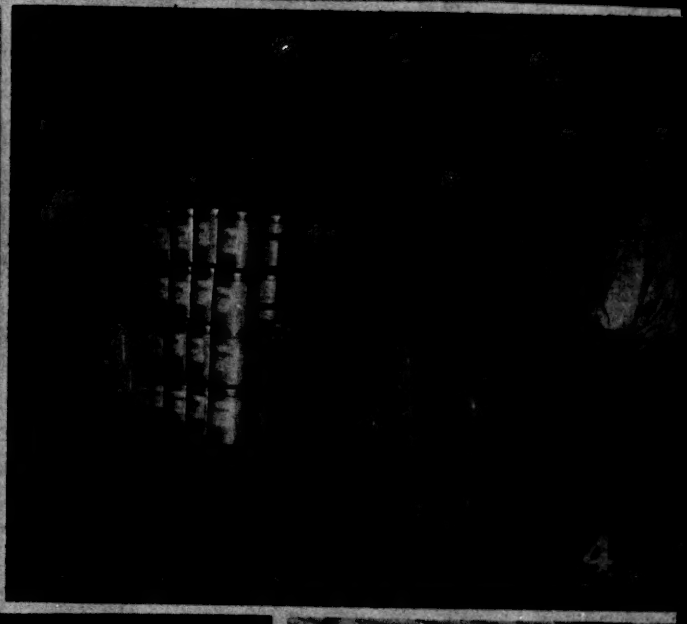

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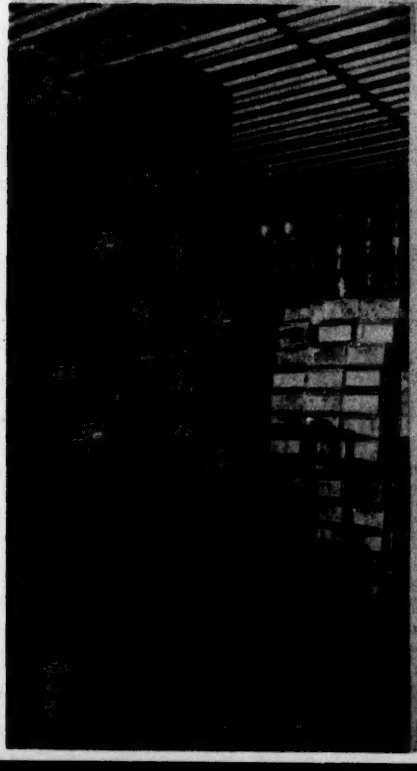

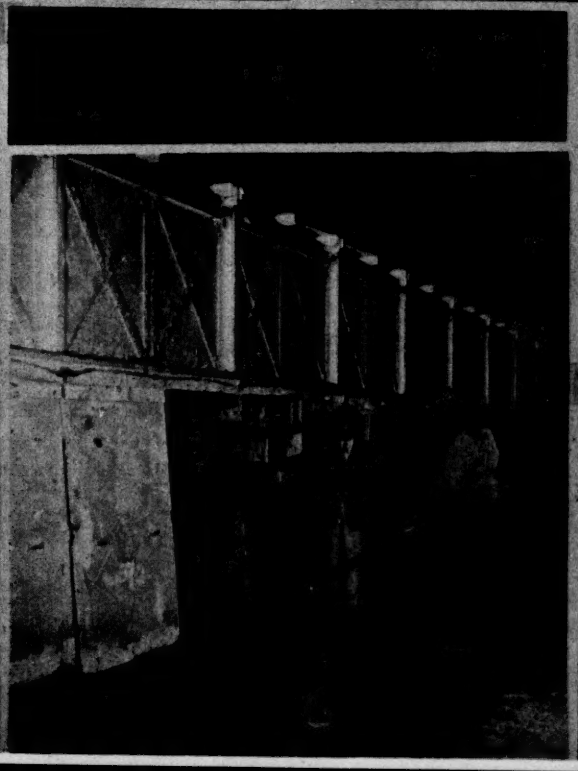

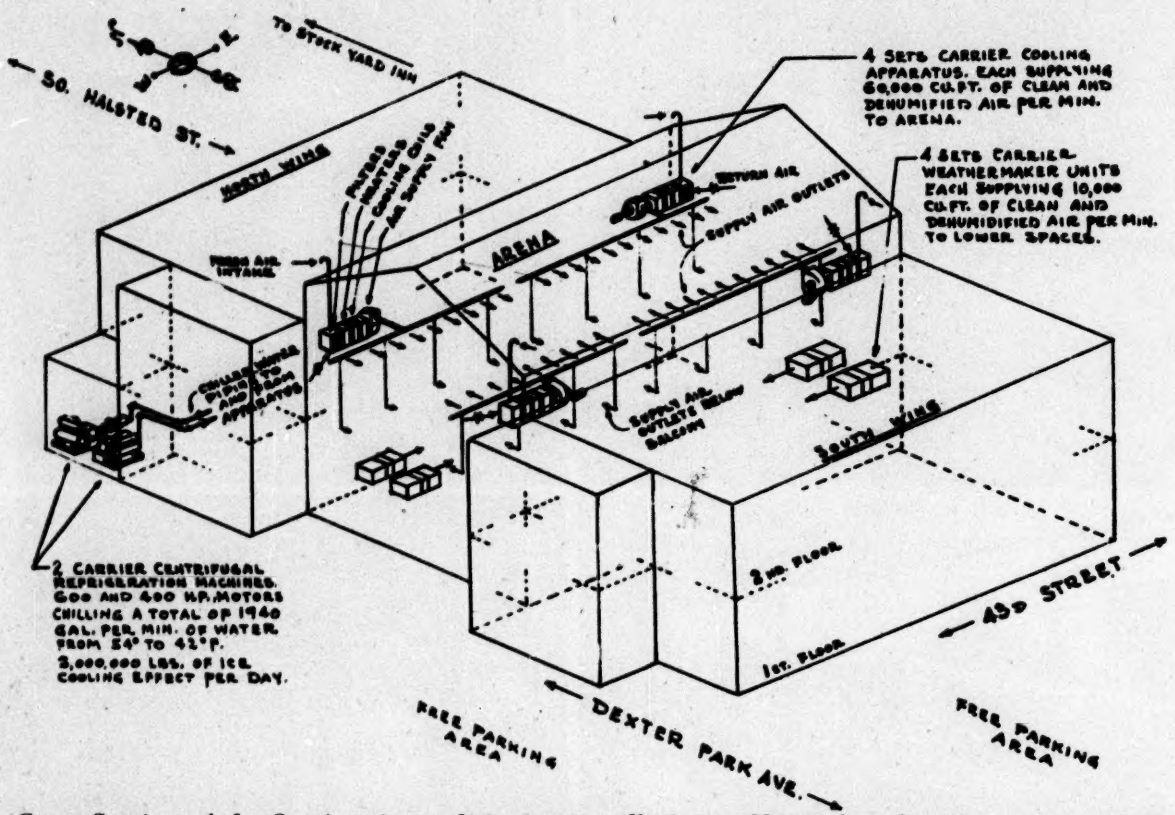
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NORTH WING
FILTERS HEATERS COOLING COILS AIR SUPPLY FAN
FRESH AIR INTAKE
ARENA
RETURN AIR
SUPPLY AIR OUTLETS
SUPPLY AIR OUTLETS BELOW BALCONY
SOUTH WING
2 CARRIER CENTRIFUGAL REFRIGERATION MACHINES. 600 AND 400 H.P. MOTORS CHILLING A TOTAL OF 1940 GAL. PER MIN. OF WATER FROM 54° TO 42°F. 2,000,000 LBS. OF ICE COOLING EFFECT PER DAY.
2ND. FLOOR
1ST. FLOOR
43D STREET
DEXTER PARK AVE.
FREE PARKING AREA
FREE PARKING AREA

Cross Section of the Carrier air conditioning installation at Chicago's political convention hall, the International Ampitheatre

One Thousand Tons of Refrigeration Cooled Delegates at Two Political Conventions

NOW that the country has recovered from a rigorous political campaign after having elected a president for another four years, members of both political parties can turn their thoughts back to the much publicized cooling plant hurriedly installed for the conventions held in mid-summer.

The Building

Before we cover the plant piece by piece, perhaps it will be better to picture in our minds the building that was air-conditioned. The Chicago Convention Building and International Amphitheatre is located on the East side of the Chicago Union Stock Yard, Halstead and 43rd Sts., five miles from Chicago's Loop, or central business district. The owner is the Union Stock Yard and Transit Company. M. E. Thayer is the general manager and Joe Falmer is the building superintendent.

The entire building is approximately two blocks long, one city block wide and comprises five halls. The center section, the one which we are concerned, is called the Arena, and is the section in which the conventions here held. This Arena is 238 feet long and 123 feet wide, a total of approximately 29,000 square feet. Distance from the floor to the center of the ceiling is 87 feet. In this area 4500 people may be seated on the ground floor and 7500 in boxes, mezzanine and balcony which extend from all four walls.

Temperature inside the Arena is maintained in the 70's regardless of the temperature outside the Amphitheatre. This human comfort range is maintained through use of the newly installed $350,000 air-cooling and air-conditioning plant, even though outside temperatures ranged as high as 98 F. It provided the cooling equivalent of 2,000,000 pounds, or one thousand tons, of ice daily. This is at a rate of 165 pounds of ice for each person in the Amphitheatre.

Four Sections

Visualize the area immediately under the roof as being divided into four quarters. Each area has its own air supply system. The old heating and ventilating ducts were modified and 16 new run-outs from two existing parallel supply ducts at the long sides of the Arena extend inward 60 ft. at the arches on 21 foot centers to distribute 61,700 cfm of air evenly over each quarter, or 246,800 cfm total over the balcony, mezzanine and boxes.

Beneath the boxes, mezzanine and balcony, two more parallel sets of existing supply ducts along the long sides of the Arena, were altered to return air to the booster systems. In this duct work were installed four

supply air booster units complete with existing heater coils, new cooling coils and fans. This air was redistributed at this lower level directly over the main floor in four distinct systems from east and west ends of the hall.

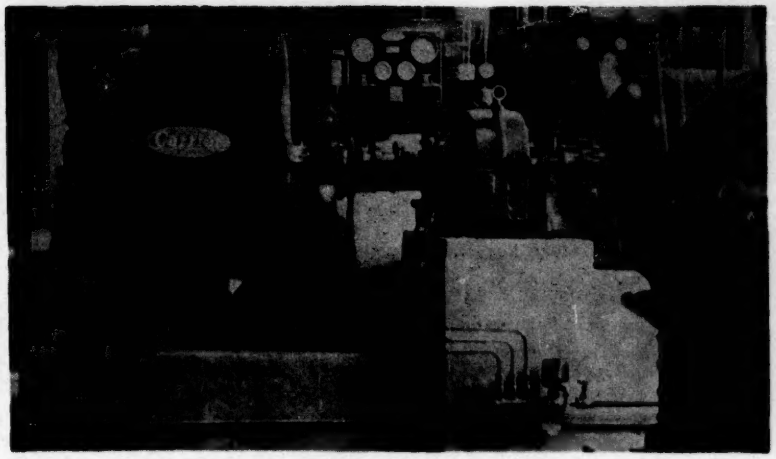
Exhaust ventilation was through four existing 18,500 cfm fans at the high point of the roof. One additional fan of 21,700 cfm was added to bring the total exhaust rate to 95,700 cfm as required by code for buildings of this size and occupancy.

Since the peaked roof was uninsulated, the greater portion of the solar heat load was removed by spraying well water over the roof. The water was first used for cooling the refrigerant gases from the compressors and then piped to the roof. Headers over 200 ft. long on either side of the sky lights distributed the water over better than 30,000 sq. ft. of surface. Chilled water lines from the engine room to the four supply cooling coils was carried in 10 inch mains.

Chilled water lines were insulated with crepe wool felt, two ¾ in. layers being applied to 3 in. lines and under, two layers of 1 in. material applied to 4 in. lines and over. Insulation of ducts in non-air-conditioned spaces was 1 in. thick corkboard.

Operators of refrigeration equipment will no doubt visualize the great amount of machinery involved in the operation of this system. The four major air supply fans were American Blower Co. "Sirocco," 61,700 cfm each at 250 rpm and 2½ in. static pressure, already existing in the heating and ventilating system. Motors driving these fans were only 25 hp and were replaced with new Ideal Electric and Manufacturing Company motors of 40 hp, 3 phase, 440 volt, 1160 rpm, wound rotor induction type. Reduction in speed was accomplished by eight V-belts and pulleys. Controls were drum type with 10 accelerating steps, four of which were operating steps; i.e., motor could be operated at four speeds.

The new cooling coils inserted in the existing system were Carrier "Aerofin." They were designed to reduce air at 84 F dry bulb and 69 F wet bulb to 55 F dry bulb, 54 F wet bulb and 53 F dew point. Air velocity over coil was 550 fpm. Arrangement of the coils was for counter flow of chilled water to air movement. Make up air, or air changes, was 25 percent of air passing through four major supply systems. Each system had 56 filter panels. Outside air and return air dampers were manually operated. Face and by-pass dampers were automatically controlled by modulating motors.



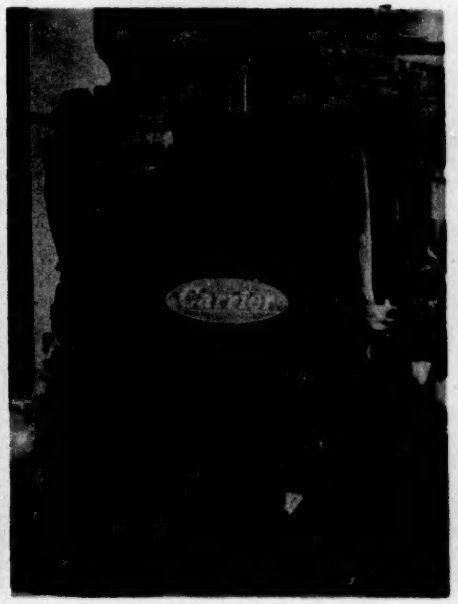
600-ton Carrier Centrifugal refrigerating machine.

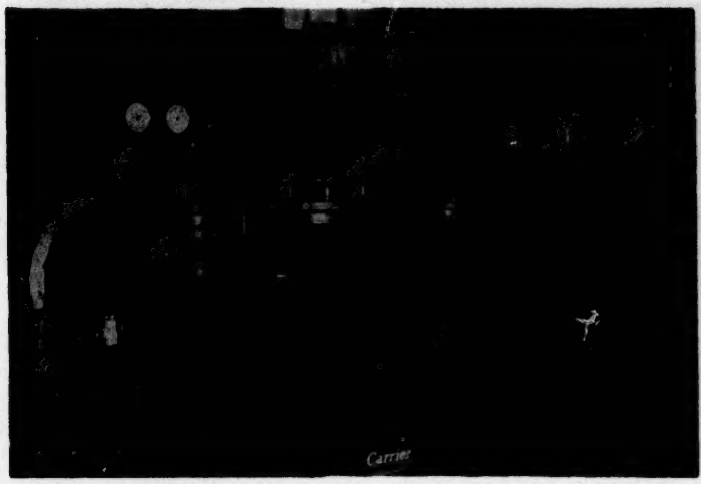
Air Booster Systems

Machinery for the supply air booster systems were Carrier units. Fans turned at 780 rpm and delivered 10,000 cfm each. There were four such units, which included fans, coils, filters, and dampers. Motors were 5 hp, 440 volt, 3 phase induction type, 1725 rpm. V-belts were used for speed reduction. Air from remodeled duct under balcony and mezzanine structures, entered new Carrier units through existing reheat coils at 80 F dry bulb and 67 F wet bulb and was discharged at 55 F dry bulb, 54 F wet bulb, and 53 F dry bulb. All units were suspended from under the mezzanine-balcony structure.

Right: Compressor of 600-ton Carrier Centrifugal refrigerating machine.

Below: Compressor of 400 horsepower Carrier centrifugal refrigerating machine. This machine provides 400 tons refrigeration for air conditioning or 160 tons refrigeration for ice rink.





The refrigeration plant comprises two units. Compressor unit No. 1 is Carrier model 17 M 54, two stage centrifugal rated at 600 tons. Compressor, condenser and chiller are arranged with condenser above chiller and compressor at side on an intermediate level. This forms a compact, accessible arrangement, a real asset when you consider the overall floor area of the machinery room is only 23 x 45 ft. Unit No. 2 is also a Carrier, model 17 P 44, three stage centrifugal, rated at 400 tons and arranged identical to No. 1.

Carrene-2 is used in both units. Unit No. 2 is designed with a view of using it for refrigeration of ice skating rinks. Brine, naturally, would be the cooling medium in this latter application. This system would then be rated at 160 tons with 18 to 14 F split and 1120 gpm brine circulated.

The gears for the No. 1 Unit are single reduction. Ratio is one to 2.77. Gears for the No. 2 Unit are the same type, but with a ratio of one to 3.294.

Motors

Motors driving the compressor units are both Ideal Electric and Manufacturing Company squirrel cage induction motors specifically manufactured for centrifugal compressor applications. They start directly across the line at full voltage and have an accelerating torque feature built in. Motor for Unit No. 1 is 600 hp, 2300 volt, 1780 rpm, 135 amp. constant speed with 40 C rise and 15 percent continuous overload factor. Unit No. 2 has a motor rated at 400 hp on 2300 volts and draws 90 amps. It is also constant speed and has same overload factors. cessory electrical equipment was installed by Union Stockyard and Transit Company, the owner and operator of the Convention Hall.

Condensers

Shell and tube refrigerant condensers are of Carrier make. Condenser No. 1 operates on a temp rise of 65 to 90 F on 670 gpm with a 23 ft. pressure drop. Operation of condenser No. 2 is identical except that 395 gpm are circulated. Cooling medium is well water taken from the Union Stock Yards and Transit Company mains. A well water pump takes the water from the mains to the condensers. The pump is a single stage centrifugal rated at 1100 gpm against a 45 ft. head, and driven by a 20 hp, 3-phase, 1750 rpm, induction motor direct connected by flexible coupling. Waste is to sewer.

Chillers, also assembled integral with the Carrier plants, are rated at 1220 gpm for No. 1 and 720 gpm for No. 2, with water being chilled from 54 to 42 F. Pressure drop through chillers is 8.5 lbs. Chilled water taken from these units is circulated to the cooling coils of the supply air and booster air cooling units by two single stage centrifugal pumps, both rated 1000 gpm against a 90 ft. head. Motors are 30 hp, 3 phase, 1750 rpm, induction type, direct connected with flexible couplings.

Spray water for the roof is taken off the discharge side of condensing system by a single stage centrifugal pump identical to the chilled water pumps except for 600 gpm discharge, and in that motor was 25 hp, 1800 rpm.

Operating Characteristics

Although the plant dropped the temperature of the Arena 12 F. in 1½ hours during tests, the operating characteristics of the plant during the convention were as follows: Pull down time normally 2½ hours with No. 1 unit on the line for two hours and both units being used for the last half hour and throughout the operating period. In an emergency, both units have been known to pull the Arena temperature down to a design temperature of 75 F in 45 minutes after having been idle all night.

Both machines operated on a discharge pressure at 5 to 6 lbs. and a suction of 15 inches, except on the first day when discharge pressure went from 11 to 13 lbs. during condensing water shortage. The motor for No. 1 compressor unit drew 90 amps on the average, the motor for No. 2 compressor averaged 87 amps.

Complete installation of this air conditioning system was made in 120 working days. Prime contract for the air conditioning was awarded to William A. Pope Company. Narowetz Heating and Ventilating Company were the ventilating contractors. Maurice E. Fine of A. Epstein & Sons, Inc., Engineers, Chicago was the engineer in charge of the air conditioning design and installation.

Frozen Tuna from Japan

MORE frozen Tuna from Japan is in the offing if Japanese exporters do as expected and increase their self imposed ceiling on exports from 12,000 to 20,000 tons annually. It is reported that unusually large catches by the Japanese fishing industry and growing demands from American packers are behind the move.—Cold Facts.

Hotel Air Conditions Rooms to Suit Guests

HOW does a hotel air condition its rooms without the guests even being aware that anything unusual is happening? The Biltmore Hotel in Atlanta and Carrier Corporation have just worked out this answer. It's: "Hit 'em where and when they ain't."

First, it was decided to put all central equipment for a 296 room year-round Carrier Conduit Weathermaster System up on the roof, 12 stories above the street, where no one would see it or know it was going into place. It was made easy by using a Carrier absorption refrigerating machine which not only has the unusual faculty of chilling water with steam, but is light in weight and has no moving parts. It can be located on top of the building without special structural supports. Despite its lightness, the Biltmore's machine will have a cooling capacity equal to 330 tons of ice a day.

Low Occupancy Time

Then a careful check was made of the Biltmore's "house count" or room occupancy cycle during the past few years. It was discovered that there was a low point in August and another in December. As the August low approached, the hotel booked guests into one wing while workmen went into the other and began sliding small diameter conduit for conditioned air from the roof down through vertical tiers of rooms.

In December they again went into empty rooms, putting the room units in place, and hitching them to the conduit. This operation was simplified by the fact that no ductwork is necessary with the Weathermaster system.

The result: Unsuspecting customers will one day discover they can dial their own weather, warm or cool, whatever the temperature and humidity outside. The hotel will be happy too. They'll have installed an entire air conditioning system, like the air conditioning in the United Nations Secretariat and Lever House, without the loss of a single room rental.

California Brewery Sold

THE brewing and malting property of the Pacific Brewing & Malting Corp., San Jose, Calif. has been purchased by the Falstaff Brewing Corp. The purchase includes a brewery at San Jose with an annual capacity of 260,000 barrels.

REFRIGERATED STORAGE CAPACITY

Refrigerated Storage capacity in U. S. as of October 1, 1951 shows national capacity now 711 million cubic feet, a gain of 10 million cubic feet since 1949.

A BIENNIAL survey of the capacity of refrigerated storage warehouses in the United States as of October 1, 1951 has been issued by the Production and Marketing Administration of the United States Department of Agriculture. This survey shows a total capacity in storage warehouses of 711 million cubic feet, an increase of 10 million cubic feet over 1949, date of the last survey. For the 1951 survey warehousemen were asked to provide additional information at the request of the Defense Transportation Administration.

Efforts were made to effect as complete a coverage as possible for this survey. Questionnaires were mailed to all the known public, private, and semi-private refrigerated storage facilities, to fruit houses (apple and grape) having artificially cooled storage space, and to meat-packing plants with refrigerated space used for storage purposes. It is believed, therefore, that the coverage of the refrigerated warehousing industry was practically complete.

Refrigerated warehouses included in this survey are facilities, artificially cooled to 50 F. or lower, wherein foodstuffs are generally stored for 30 days or more. Refrigerated facilities operated by wholesalers, jobbers, or retailers who do not store for a period of 30 days or longer were not included. Also, space in lockers of 25 cubic feet or less, plants owned by the Armed Services, the Natural Cooler Storage at Atchinson, Kans., and space in plants operated as part of a retail food business, hotel, or other establishment where persons are housed or fed were not included.

On the West Coast, three states, Washington, Oregon, and California, have more warehouse capacity than any other region, with total gross space of 179,787 thousand cubic feet.

The Middle Atlantic region, which includes the nation's chief terminal and port facilities in New York, New Jersey, and Pennsylvania is second, with 146,807 thousand cubic feet.

A close third is the East North Central region, which includes Ohio, Indiana, Illinois, Michigan and Wisconsin, with 142,609 thousand cubic feet.

Although New York leads all other states, with 87,012 thousand cubic feet, Chicago is easily the first city, the 34 major Chicago warehouses having a total gross capacity of 57,362 thousand cubic feet of refrigerated space, exceeding that of New York City by more than 10 million cubic feet. The city's gross storage capacity includes 18,824 thousand cubic feet of sharp freezer storage space, capable of being held at temperatures of 0F. and below.

Growth of Refrigerated Warehousing Industry

The Department of Agriculture initiated the statistical series of surveys on refrigerated warehouse capacity in the United States about 30 years ago. The report on the first survey, October 1, 1921, showed a total of nearly 544 million cubic feet of storage space as compared with a total of more than 711 million cubic feet of space reported (Table 1 and Fig. 1) on October 1, 1951. These two reports, however, are not directly comparable as the meat-packing plants were asked to report all refrigerated space from 1921 to 1941 whereas beginning with 1943 only refrigerated space used for storage purposes was reported. Therefore, the growth of the warehousing industry as reflected by this sixteenth biennial survey was much greater than the net increase of 167 million cubic feet indicated by the survey reports from 1921 to 1951.

In most of the surveys, beginning with the first, the warehousing industry's storage capacity increased consistently. Gains in excess of 40 million cubic feet prevailed during each survey period from 1921 until 1927 and by October 1, 1929, an additional total of 61 million cubic feet was added to bring the national capacity to 729 million cubic feet. Then, in the period that followed, the growth of the warehousing industry slackened. From 1929 to 1931 only a total of 12 million cubic feet was added to the national capacity of refrigerated space and from 1931 to 1935 a net loss of 30 million cubic feet occurred. The halt of the upward trend, however, was only temporary as each successive survey after 1935 indicated that the warehousing industry was again expanding its storage capacity. Increments of 19 million cubic feet, 16 million cubic feet and 20 million cubic feet from 1935 to 1941 expanded the gross national storage capacity to 766 million cubic feet. Thus, from 1921 to 1941, the growth represented 222 million cubic feet, or an increase of 40 per cent.

Because of the noncomparability of the data collected after 1941 with those of earlier years, warehouse capacity reflected an apparent decrease from 1941 to 1943. However, that decrease resulted from a change in the basic questionnaire under which meat-packing plants were instructed not to report, as storage space, refrigerated rooms used for cutting and boning meats, space used for cooling dressed carcasses, and similar working space.

Even with the change made in reporting storage space, total refrigerated warehouse capacity continued to increase because of the growth in public, private and semiprivate storage space. These facilities expanded almost 150 million cubic feet from 1941 to 1951 and helped to increase the national capacity of refrigerated storage to 711 million cubic feet distributed according to temperature range, as follows: Over 212 million cubic feet of sharp freezer space; about 92 million cubic feet of freezer space; and almost 407 million cubic feet of cooler space (Fig. 2).

Increased Freezer Space

Of greater importance than the continued upward trend in total refrigerated storage capacity was the change in the distribution of this space according to temperature range. In the years prior to 1939, space cap-

TABLE 1.—TOTAL REFRIGERATED STORAGE CAPACITY IN THE UNITED STATES, BY TYPE OF WAREHOUSING OPERATION, OCTOBER 1, 1951

Type of refrigerated warehouse	Plants	Gross space				Net piling space			
		Sharp freezer	Freezer	Cooler	Total	Sharp freezer	Freezer	Cooler	Total
	Number	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.
Public general	615	168,634	50,171	156,141	374,946	120,066	36,305	115,107	271,478
Private and semi-private general	472	28,913	18,376	47,366	94,655	21,225	12,809	33,993	68,027
Meat-packing plant	216	14,180	17,737	66,312	98,229	9,269	11,470	45,433	66,172
Apple houses:									
Public	141	754	997	48,417	50,168	640	861	40,041	41,542
Private and semi-private	469	229	4,239	88,550	93,018	193	3,124	71,481	74,798
Total	1,913	212,710	91,520	406,786	711.016	151,393	64,569	306,055	522,017

able of holding freezer temperatures amounted to less than one-fourth of the total refrigerated space despite a long-term growth of 40 million cubic feet from 1921 to 1937.

Capacity Almost Doubled

Since then, refrigerated storage capacity almost doubled, advancing from 162 million cubic feet (October 1, 1937) to 304 million cubic feet (October 1, 1951). Much of this increase, however, was in sharp freezer space (temperature range of 0 F. and below), which more than doubled, whereas freezer space (temperature above 0 to 29 F. inclusive) decreased. Thus, in the period from 1939 to 1951, national capacity of sharp freezer space expanded from 87 million cubic feet to more than 212 million cubic feet, and at the same time freezer space was reduced from 97 to 92 million cubic feet. Aside from the magnitude of the change, which was significant, the composition of national refrigerated storage capacity was altered by the expansion of sharp freezer space to the extent that in 1951 the ratio of sharp freezer space to other types of space was about 1:2 as compared with a ratio of almost 1:8 in 1939; 1:5 in 1943; and 1:3 in 1949. At this rate, it would not be inconceivable to expect that in the future the warehousing industry would have a greater storage capacity in the range of 0 F. and below than in the temperature range above 0 F.

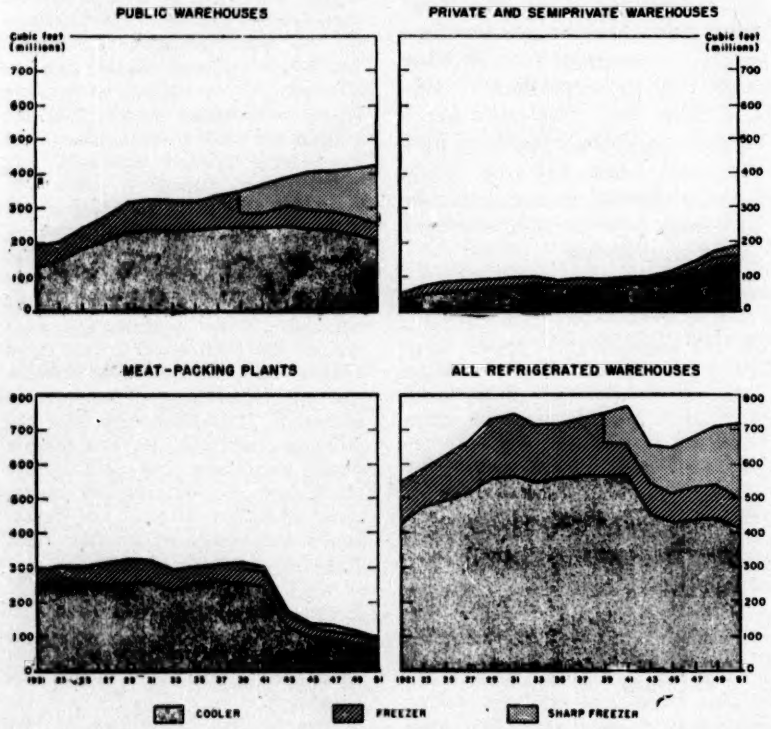


Fig. 1—Distribution of gross refrigerated space, by temperature range and by type of warehouses, 1921-1951.

Cooler Space

Since 1943, the trend has been downward for national cooler capacity and by 1951 a reduction of about 10 per cent had resulted. With 407 million cubic feet of space available on October 1, 1951, cooler space represented almost three-fifths of the national capacity as compared with four-fifths in 1925 and an average of three fourths from 1921 to 1939. Cooler capacity trend gave no evidence that it was becoming less important in the national picture until World War II as storage capacity gains were most consistant except during the mid-1930's. In October 1921, more than 421 million cubic feet of cooler space was reported by the Nation's warehouses, and by 1931 the cooler space totaled almost 562 million cubic feet. With additional capacity added in the following 10 years, the United States total storage capacity amounted to 567 million cubic feet by October 1, 1941. Although these data include nonstorage rooms in meat-packing plants, they are, nevertheless, comparable from 1921 to 1941, but not comparable with data collected after 1941.

Distribution of Facilities

Refrigerated storage facilities are in every State of the United States, ranging from one warehouse in Nevada to 299 facilities in New York. The Pacific Coast States, with 447 plants, lead all others in number of refrigerated facilities and are followed by the Middle Atlantic States, with 432 plants. More than half of all refrigerated warehouses and more than half of the storage space may be found east of the Mississippi River. Warehouse capacity most common, according to the 1951 survey, was greater than 100,000 cubic feet but not greater than 200,000 cubic feet net piling space. About two-thirds of all warehousing plants contain no more than 200,000 cubic feet; four-fifths, no more than 400,000 cubic

feet; and nine-tenths of all plants contain no more than 700,000 cubic feet.

Space capable of holding minus 20 F. temperature was reported by 372 warehouses with a gross capacity of almost 43 million cubic feet. Although the Pacific Coast States ranked first in the number of plants having this type of space, the East North Central States, with 14 million cubic feet, led all other regions on the basis of capacity. Next in order of importance were the West North Central States (8 million cubic feet); Pacific Coast States (5.8 million cubic feet); and the Middle Atlantic States (5.5 million cubic feet).

Aside from its function to carry over perishables and semiperishables from one season to another, perhaps the greatest advantage resulting from the refrigerated storage industry is its role in serving communities remote from points of production thereby increasing the markets for many products. Accordingly, the location of warehouses at or near rail sidings prevails to a great extent. An analysis of the 1951 survey revealed that almost 70 per cent of all storage facilities may be found on railroad sidings and two out of three such facilities are able to provide storage-in-transit privileges if called for.

Mechanical Equipment

To move commodities into and out of storage, many warehousemen use mechanical equipment such as a fork lift truck which, with pallets, enables the operator to move unit loads. Palletized operations were reported by 344 facilities, of which only 161 were fully palletized warehouses; the others were partially palletized. The number of electric-driven trucks in use totaled 788 as compared with 350 gas-driven trucks.

Although the refrigerated storage industry has placed great emphasis on the construction of new space capable of holding freezer temperatures, and some cooler space has been converted to freezer space, the national capacity of cooler space is not limited to the 407 million cubic feet reported on October 1, 1951. Almost a fifth more cooler space potentially could be made available if needed as the warehousing industry has about 75 million cubic feet of freezer space capable of holding cooler temperatures. Located primarily in the Middle Atlantic, East North Central, West North Central, West South Central, and Pacific regions, these geographic regions could meet any unusual demands for cooler space that might be required.

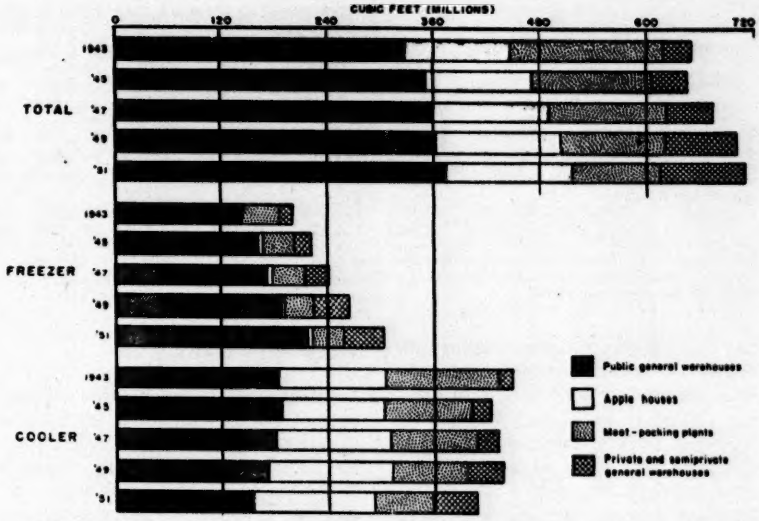


Fig. 2—Distribution of gross refrigerated storage space by type of warehouse, October 1, 1945-October 1, 1951.

Public Warehouses

Public warehouse space, which totaled 425 million cubic feet, may be found in every State except Wyoming. For public use a total of 169 million cubic feet of space is capable of maintaining temperatures of 0 F. and below, including 32 million cubic feet of space capable of maintaining minus 20 F. To keep pace with the needs of customer industries since 1939, public storage warehouses have added over 100 million cubic feet of space to their sharp freezer space. So great has been its expansion that total freezer space in 1951 was equivalent to four times that in 1923.

Storage in Transit

Storage-in-transit privileges were available in 427 public general warehouses, according to reports received, and in addition these general warehouses were using more than half (431) of all the electric fork lift trucks used in palletized operations and they maintained an additional 111 gas-driven trucks.

With the expansion in the frozen food industry there has been an attendant increase in private and semiprivate warehousing space. Processors and growers of agricultural perishables who find it to their advantage to have near at hand the space needed for their own use often build warehouse facilities to facilitate their function as producer, processor or distributor. Within recent years private and semiprivate warehouses have increased in number and capacity.

In the early years, 1921 to 1933, refrigerated storage space classified as private and semiprivate made successive gains, from a total capacity of 56 million cubic feet to 97 million cubic feet; however, a cutback in space during the mid-1930's brought the total capacity down to 83 million cubic feet by 1939. Then, beginning with 1941 and up to the present time, the industry not only recaptured its losses but gained so consistently that total capacity equaled 188 million cubic feet on October 1, 1951. (Tables 1 and 2 and Figs. 1 and 2.)

Percentagewise, the capacity increase of private and semiprivate facilities indicated a more rapid rate of growth than that reported by public warehouses and in regions where public general space experienced net losses, private and semiprivate general space showed net gains. This was particularly true in the Middle Atlantic and West North Central regions. As further indication of the rising importance of this type of warehousing activity, its relative position within areas has been improving. For example, in the South Atlantic region, private and semiprivate warehouses now comprise 12 per cent of the area's total space; in 1949 they comprised 8 per cent. On the west coast the percentage increased from 12 to 16 per cent, and in the Mountain States the increase was from 9 to 15 per cent.

Meat-Packing Plants

Since the number of meat-packing plants in the United States is greater than the number that reported for

TABLE 2.—TOTAL GROSS REFRIGERATED STORAGE CAPACITY IN THE UNITED STATES, BY TYPE OF WAREHOUSE, OCTOBER 1, 1929 - OCTOBER 1, 1951

Type of refrigerated storage	1929 1,000 cu. ft.	1931 1,000 cu. ft.	1933 1,000 cu. ft.	1935 1,000 cu. ft.	1937 1,000 cu. ft.	1939 1,000 cu. ft.	1941 1,000 cu. ft.	1943 1,000 cu. ft.	1945 1,000 cu. ft.	1947 1,000 cu. ft.	1949 1,000 cu. ft.	1951 1,000 cu. ft.
Public [1]	316,810	325,703	317,211	322,450	333,833	351,368	371,771	389,991	403,832	408,232	413,256	425,114
Private [1]	29,133	35,222	32,739	31,051	33,890	32,072	43,973	49,544	62,291	93,781	85,417	94,929
Semiprivate [1]	60,322	58,853	64,718	53,853	52,957	50,438	48,407	42,081	45,254	52,035	85,718	92,744
Meat-packing plant [2]	322,330	321,065	297,274	303,206	309,642	312,562	302,232	169,650	134,814	130,993	116,324	98,229
Total	728,595	740,843	711,942	710,570	730,322	746,440	766,383	651,266	646,191	675,041	700,778	711,016

[1] Includes apple house refrigerated storage space.

[2] The apparent decrease in over-all storage space since 1941 is due to meat-packing plants not reporting refrigerated working space as they did in previous years.

this sixteenth biennial survey, it might be construed that the data were incomplete with respect to storage space in meat-packing plants. However, as previously pointed out, questionnaires were mailed only to those meat-packing plants that stored products for at least 30 days. Accordingly, a large number of slaughterers were excluded since many of them use their refrigerated space to accumulate inventories which generally are moved out before the end of 30 days.

East and West North Central regions, having more than two-thirds of the meat-packing space, have since early days exceeded all other regions in this type of warehousing activity. Because the meat-packing industry has relatively little capacity in the range capable of holding freezer and sharp freezer temperatures, more than two-thirds of its capacity falls in the cooler classification. In the East North Central States, the ratio is even higher with about three-fourths of the space unable to hold freezer temperatures. Meat-packing plant storage space in Illinois and Iowa, representing 15 and 12 million cubic feet, respectively, almost surpassed the combined capacities of such space in New England, Middle Atlantic, South Atlantic, East South Central, West South Central, Mountain, and Pacific regions which, collectively reported only 30 million cubic feet of space.

Apple Houses

Three well-defined areas support about 90 per cent of refrigerated space used almost exclusively for the storage of apples and pears. On the west coast, more than 80 million cubic feet of space, most of it in Washington, represented this type of activity as compared with 25 million cubic feet of space reported by the States in the Middle Atlantic region. The apple houses in Virginia and West Virginia, with 21 million cubic feet of space, accounted for the major share of the regional total refrigerated capacity.

Regional Capacity

Regional gross refrigerated storage capacity in the United States follows a pattern created by the agricultural and economic characteristics common to the region. Thus, specialized warehousing activities have been developed to meet the specific needs of the area in preserving and marketing the food perishables grown or brought into the region. This situation has prevailed for many years and even though markets today are nearer to points of agricultural production, because of faster transportation, specialized storages are becoming more important in all regions.

On the west coast the three States, Washington, Oregon, and California, have a total gross refrigerated warehouse capacity greater than any other geographical division. Only 10 years ago (1941) the Pacific region ranked fourth in the Nation with 120 million cubic feet of refrigerated space, whereas on October 1, 1951, refrigerated gross storage capacity totaled almost 180 million cubic feet which was 33 million cubic feet more than the next leading area, the Middle Atlantic region. Since the warehouse capacity survey in 1949, the Pacific region reported a gross expansion of almost 18 million cubic feet of space which is in contrast to a loss in gross warehouse capacity reported by the Middle Atlantic, East North Central, West North Central, East South Central and West South Central regions. In addition to the Pacific coast increase, only one other region, the South Atlantic, reported a significant gain. In the latter region, warehousing capacity has been increasing steadily since 1941 and by October 1, 1951, gross refrigerated warehouse space totaled 66 million cubic feet, a gain of 10 million cubic feet over the capacity reported in 1949 and a gain of 20 million cubic feet since 1941.

Although Pacific coast facilities led in total warehouse capacity and exceeded by far the gains reported by other regions, all the reported increase since 1949 cannot be attributed to new constructions. Coverage for the 1951 survey was more complete than for the previous one, especially in the case of private warehouse facilities used almost exclusively for the storage of grapes, but some new facilities were built on the west coast and this additional space is reflected in the capacity totals for public general warehouses and apple houses.

Moving eastward to the Nation's great terminal and port areas, New York, New Jersey, and Pennsylvania, the Middle Atlantic region represents the second leading storage area with respect to gross refrigerated capacity. Despite a loss of almost 3 million cubic feet of storage space since 1949, this region continues to lead all others in the quantities of frozen fruits and frozen vegetables stored within its boundaries and it ranks second in the storage of selected dairy products, poultry, and eggs.

With millions of pounds of foods received regularly for storage, the Middle Atlantic region has a well-balanced distribution of refrigerated space to accommodate fresh and frozen foods with equal facility. About a fifth of the national cooler capacity is located in New York, New Jersey, and Pennsylvania, and freezer capacity represents almost a fifth of the national capacity (17 per cent). Moreover, this region ranks first in the Nation with respect to capacity, 45 million cubic feet, of sharp freezer space, of which almost 6 million cubic feet of space are capable of holding minus 20 F.

Ranking third in the Nation with respect to gross refrigerated storage capacity is the East North Central region which comprises the following States: Ohio, Indiana, Illinois, Michigan, and Wisconsin. Collectively, these States have about 143 million cubic feet of space (Table 3) of which more than half is devoted to public general warehousing; about a fifth each to private and semiprivate general, and meat-packing; and the remainder (5 per cent) to apple storage.

Cooler net piling space in the East North Central region is equivalent to

TABLE 3.—TOTAL REFRIGERATED STORAGE CAPACITY OF ALL TYPES OF WAREHOUSES, BY REGIONS, OCTOBER 1, 1951

Region	Plants	Gross space				Net piling space			
		Sharp freezer	Freezer	Cooler	Total	Sharp freezer	Freezer	Cooler	Total
	Number	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.	1,000 cu. ft.
New England	187	13,934	4,830	14,433	33,197	8,708	3,402	10,679	22,789
Middle Atlantic	432	45,212	15,618	85,977	146,807	31,284	11,089	64,799	107,172
East North Central	339	38,186	20,997	83,426	142,609	27,849	13,921	61,288	103,058
West North Central	149	34,435	11,664	39,868	85,967	24,318	7,722	27,078	59,118
South Atlantic	183	19,627	7,905	38,462	65,994	13,934	6,026	30,792	50,752
East South Central	45	5,438	1,988	6,574	14,000	3,845	1,343	5,111	10,299
West South Central	78	15,436	3,049	11,532	30,017	11,596	2,177	8,522	22,295
Mountain	53	6,593	866	5,179	12,638	4,883	574	3,556	9,013
Pacific	447	33,849	24,603	121,335	179,787	24,976	18,315	94,230	137,521
United States	1,913	212,710	91,520	406,786	711,016	151,393	64,569	306,055	522,017

about one-fifth of the national warehousing capacity, and this region contains more than one-fifth of the freezer space in the country. Its capacity for sharp freezing is second only to that in the Middle Atlantic region, and it ranks first in the Nation with 14 million cubic feet of space capable of holding minus 20 F.

West of the Mississippi River in the States comprising the West North Central region is to be found the fourth largest concentration of refrigerated warehouse space. Composed largely of meat-packing plants, 38 million cubic feet, and public warehouse space, 39 million cubic feet, the region has a total storage capacity of 86 million cubic feet. During the 2-year interval since the last survey, warehouse capacity in the area decreased almost 14 million cubic feet, almost all of which was in meat-packing plants. This decrease resulted because: (1) storage space was made unusable by the floods in 1951 and was not put back into operation; and (2) more accurate reports from meat-packers excluded working space from capacity totals.

The downward trend in gross storage capacity evidenced in almost all the regions east of the Mississippi River would have been even greater were it not for additional space being made available in the South Atlantic and New England regions. Space in the South Atlantic region has been increasing steadily since 1941, almost 50 per cent more space being added, an increase exceeded only by the growth of space reported on the west coast. Regional capacity of the South Atlantic States totaled about 66 million cubic feet on October 1, 1951, as compared with 56 million cubic feet reported in 1949. In this region public general warehouse space reflected a gain of more than 7 million cubic feet and private and semiprivate general space almost doubled since 1949 with 8 million cubic feet being reported in operation at the time of this survey.

New England refrigerated warehouses added almost 3 million cubic feet of storage space by October 1, 1951, to bring their total capacity to 33 million cubic feet. Public general warehousing predominates in this area as about three-fifths of the regional capacity is devoted to this type of warehousing. Moreover, the increase reported accrued from expansion in public warehousing space which now totals more than 20 million cubic feet, bringing the regional total capacity to the rank of sixth in the Nation.

Of the remaining three regions, their standing in the national picture is as follows: West South Central, East South Central, and Mountain. In each of these areas, public general warehousing activities have greater standing than other types of refrigerated facilities. The storage space in the West South Central region is 30 million cubic feet of which more than three-fourths is devoted to public general warehousing. On the basis of other services available in the area, cooler and freezer capacities amount to 12 and 3 million cubic feet, respectively, and, in addition, the area has 15 million cubic feet of sharp freezer space. Unlike other area distributions, the relationship of sharp freezer space to nonsharp freezer space is much higher in the West South Central region than in the other areas.

The results of the 1951 survey again point out the importance of areas east of the Mississippi which have more than half of the refrigerated space in the Nation and have expanded their gross capacity by about 2 per cent since 1949 and 7 per cent since 1943. Generally, the increase is not an outgrowth of all areas adding new space but rather a result of new industries developing within an area which formerly had no need for additional warehouse space. To meet this area demand, new

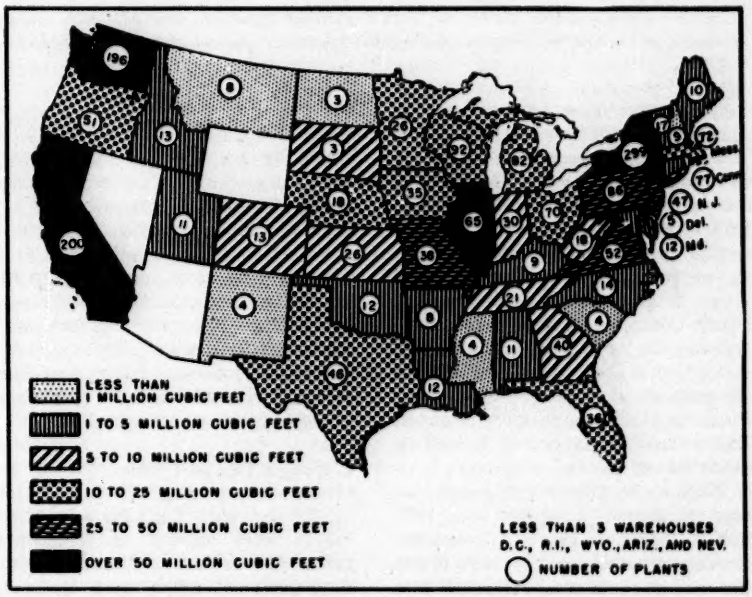

LESS THAN 1 MILLION CUBIC FEET
1 TO 5 MILLION CUBIC FEET
5 TO 10 MILLION CUBIC FEET
10 TO 25 MILLION CUBIC FEET
25 TO 50 MILLION CUBIC FEET
OVER 50 MILLION CUBIC FEET
LESS THAN 3 WAREHOUSES D.C., R.I., WYO., ARIZ., AND NEV.
NUMBER OF PLANTS

Fig. 3—Gross refrigerated storage space by states, October 1, 1951.

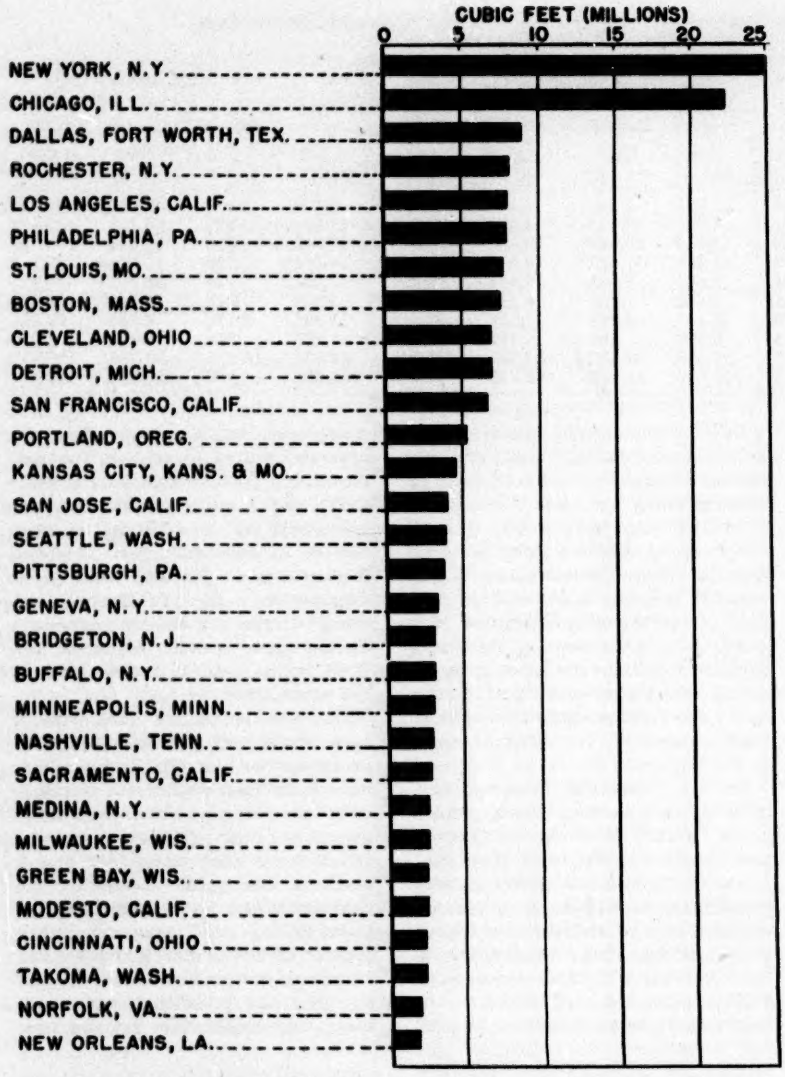


Fig. 4—Cities with three or more public general refrigerated warehouses, with two million or more cubic feet net piling space, Oct. 1, 1951.

facilities are being built or existing space increased. The older and more established storage areas are increasing capacity in the low temperature range, where the need is greatest, and at the same time they are reducing cooler capacity which results in an over-all reduction in total space. Thus, the Middle Atlantic, East North Central, and East South Central regions have lost about 4 million cubic feet of space since 1949 and the New England and South Atlantic States not only made up this deficit but added an additional 8 million cubic feet of space.

West of the Mississippi, warehouse space increased 14 per cent since 1943 and this area is gradually reducing the capacity difference between it and the eastern half of the Nation. The 1951 survey indicated that this difference in storage capacity amounted to 94 million cubic feet of space; in 1943 the difference was 116 million cubic feet. Largely through new space and better coverage, the Pacific coast region has moved to the forefront in total refrigerated capacity and may become even more important in the Nation if other areas continue to lose space. Since 1949, public, private, and semiprivate storage space increased 16 million cubic feet and apple house space increased almost 2 million cubic feet in the Pacific region.

Chicago Leads Cities

Although New York State leads all others with respect to warehouse capacity, it is in the State of Illinois that the first ranking city, Chicago, is located. Chicago's capacity of 57 million cubic feet of storage space surpassed by more than 10 million cubic feet the warehouse capacity in New York City. Refrigerated warehouse space in Chicago and New York have always held the first two positions in national ranking and both cities have so much more space than the cities next in order of importance that their relative positions have not been changed despite a net loss in space from 1943 to 1951. Chicago, for example, had over 71 million cubic feet of storage space in 1943 as compared with 57 million cubic feet in 1951.

New York Capacity Stable

However, it is possible that the capacity reported in 1943 included some nonstorage space reported in error which gave rise to a significant net loss of 14 million cubic feet. New York City's warehouse capacity, on the other hand, has remained relatively stable but shows a slight reduction over a period of years. On October 1, 1921 reports from greater New York indicated a warehouse capacity of 47 million cubic feet. From then until 1931, expansion brought the city total to more than 54 million cubic feet but by 1941 the total was reduced to 49 million cubic feet. Thus, from 1921 to 1941 there was a net gain of only 2 million cubic feet. With about 46 million cubic feet in New York on October 1, 1951, the long-term change amounts to a net loss of a million cubic feet in 30 years.

On the west coast, Yakima with almost 30 million cubic feet of storage space ranks third among the cities in the Nation with respect to warehouse capacity. With almost all this space in the cooler classification, the city is second only to Chicago in the availability of this type of storage space.

Minute Maid Reports Increased Orange Juice

MOVING to meet the rapidly expanding consumer acceptance of frozen orange juice concentrate, the Minute Maid Corporation, Plymouth, Fla., has set production goals for the 1952-53 season at approximately 12,000,000 gallons according to the Journal of Commerce. This compares with the 1951-52 output of 10,000,000 gallons.

The quantity of fresh fruit necessary for this yield has been estimated at 8,000,000 boxes. Minute Maid has already contracted for almost half of this total under its new Grower Participation Plan, and will purchase the remainder of its requirements on the open market.

THE ICE INDUSTRY

NATIONAL ASSOCIATION OF ICE INDUSTRIES

Executive Offices
1706 L St. N. W., Washington 6, D. C.

Executive Secretary
Guy W. Jacobs, Washington, D. C.

President
Wm. J. Ayers, Memphis, Tenn.

First Vice-president
Paul H. Andres, Oklahoma City, Okla.

Second Vice-president
E. L. Gunn Jr., Atlanta, Ga.

Treasurer
Geo. Steers, Jr., Kalamazoo, Mich.

THIS MONTH IN BRIEF

The Annual Review of the Ice Industry shows that the unusually warm summer of 1952 did not produce the banner sales expected, and tonnage sales were only slightly above those of 1951. Dollar volume however was up and sales of sized and crushed ice showed an appreciable increase over the previous year.

The problem of sanitary ice now facing the ice industry is discussed and some suggestions are offered in a Bulletin issued by the Research and Engineering Department of the National Association of Ice Industries.

The Delta States Ice Association held its annual convention in Jackson, Miss. An entertainment and social program supplemented the program of business sessions and discussion of industry problems.

The importance of a well developed safety program and the problems of conducting such a program was discussed at a meeting of safety engineers of the ice, cold storage, and locker division of the National Safety Council, held in Chicago.

Annual Ice Industry Review Shows Favorable Year and Cheerful Outlook for 1953

AS AN annual feature of Ice and Refrigeration, analysis of last year's business and some comments on the immediate future are presented here, compiled from reports from leading ice producers in all sections of the country. A surprising fact, of which there have been previous hints, is that the unusually warm summer of 1952 did not produce the banner ice sales expected; which goes to show for one thing probably is that the weather may not have as strong an influence upon ice sales as has been thought, at least that there are other factors. The situation is best described as a slight improvement over the previous year on tonnage, but a fairly good improvement on dollar volume because of increased sales of processed ice at premium prices.

It is however encouraging to note that the depressing trend of recent years toward decreased sales was stopped, with an increased, although slight tonnage. The acceptance of dollar volume as a more accurate basis of determining the state of business helped to present a more favorable report both for 1952 and the outlook for 1953, since sales of processed ice show an upward curve and there is every indication that this will continue as a part of the 1953 picture.

While costs are continuing upward, increased income has made it more nearly possible to absorb them and at the same time improve the profit position.

If there is one single bright spot, it probably would be the growing sales of processed ice, opened up largely by new markets, which give some promise of taking up the slack created by declining domestic sales. Vegetable icing, meat on ice, poultry icing, truck icing, sales to mechanical users, are a few of the new markets calling for crushed or sized ice and aggregate sales for these uses show increasing volume and especially bright prospects for the future.

Vending stations also continue to occupy a prominent and growing part in the merchandising of ice. Practically all operators report good business from such outlets in 1952 and nearly all of them expect to add more machines in 1953.

A review such as this should not confine itself, like Pollyanna only to things to be glad about. Counteracting the bright spots mentioned above is the question of advertising. It is in the doldrums from the local standpoint, spasmodic and in many cases ineffective. While this phase of merchandising is taken seriously by some distributors, others do not realize fully the attitude of one manager who says he believes that it is necessary to advertise if they hope to sell.

Turning to a more happy consideration, the possibilities and opportunities for selling more ice and the outlook for 1953, appear to be a bit more optimistic, based on the widening markets for processed ice, and the spreading recognition that this kind of ice especially must be made easily available to the people who want to buy it. Also there are indications of feeling the lack of proper merchandising and planning to do something about that in 1953.

Ice Sales for 1952

IN TERMS of volume, ice sales the country over were up in some cases and down in others, the general average appearing to be about the same or slightly above those of the year before. Increased tonnage was generally credited to the warmest summer season for several years and decreased tonnage to stiffer competition. A more accurate, and a

brighter, reflection of sales may be found in the dollar volume which definitely was up, due to adjusted prices in some cases and more processed ice sales in other cases. These reports coincide very closely with results of the survey made by The National Association of Ice Industries at the annual convention in November which was to the effect that 1952 sales were expected to show a slight gain, with considerable increase in sales of processed ice.

A report from Canada states that ice sales were down about two percent in tonnage but with about the same money value.

Ice Sales for a Georgia company were approximately 12 percent behind last year in dollar value and 15 percent on tonnage volume. Tonnage was slightly ahead of last year through July, but losses in various operations in August, September, and October, ranged from 10 to 30 percent.

They do not know the reason for this decline. The weather was not as warm in the months of August through October as they were a year ago, but there was not sufficient difference in temperature to warrant the decrease in sales. Since the general level of employment has been good in the territory, they can only conclude that many people who used Ice in this period in 1951 became users of mechanical refrigeration some time prior to the current ice season. This opinion is confirmed by the fact that they had little increase in business through the extremely hot months of June and July.

An Illinois distributor says that sales were up 20 percent over last year as a result of taking over territories where the plants went out of business.

An Alabama company reports that sales were down 20 percent on both tonnage and dollar volume because of mechanical competition.

An Indiana plant reports tonnage up 10 percent over 1951, and dollar volume up much more as they finally were able to adjust prices in line with present day costs and had very favorable weather during mid-summer.

A Kansas company reports that as a result of a long hot summer ice sales increased sharply.

An Eastern company reports a small increase by two plants but overall sales were less because of lack of money, rural electrification and more mechanicals.

From New Mexico the report is that sales were about the same as the previous year, "but we sure had to work hard and push every angle to bring this about." The amount of ice produced was less, but increased volume of sized ice made up the difference.

Ice sales for a Missouri distributor for 1952 were larger than for 1951. This is due chiefly to the fact that they supplied an adjoining town with ice all of this year instead of about three months of the year before. Their dollar volume was also greater.

From upper New York, ice sales in terms of dollar volume were about the same as last year. Household ice sales have dropped each year, and there doesn't seem to be much of anything that can be done about it. Last spring they had about sixty good ice refrigerators on hand which were taking up needed space. They felt that they would do more good in customer's homes than in the warehouse, so they ran some classified advertising in the paper offering to deliver them to customer homes for a charge of $5.00, with the customer having the privilege of using the refrigerator as long as they wished. They were able to put all of the boxes out in homes using ice, and practically all of them are still in use.

Another New York distributor reports that tonnage was 6 percent less than the previous year, due to continued loss of domestic sales, but the gross revenue increased 4 percent on account of increase in ice prices.

Another New York concern says they were fortunate in taking over their only competitor so they were able to make a nice showing in both tonnage and dollar sales. Their costs per ton were held in line and they were able to make some savings in delivery. At present their sales are about equally divided between dealers and their own routes, and they like this balance.

Because of mechanical competition, a North Carolina distributor reports about 10 percent loss in both tonnage and revenue.

An Ohio distributor reports that sales were larger in 1952 by about 800 tons and $10,000. The increase was probably due to the warmer summer and a price raise of $1.00 per ton.

A southern Ohio distributor reports sales for the past year were up to the extent that even with 20 tons daily capacity from April 15 through September 1 plus 300 tons storage, they purchased an additional 200 tons of ice. Their delivery in number of customers have dropped; however, their tonnage remained about the same as 1951 due to the heat of the summer. Produce truck icing sales increased from 800 tons in 1951 to 1200 tons for 1952 due to advertising and good service.

From Oregon comes a report that tonnage for the year will be somewhere around 6 percent less than 1951. However dollar income will be considerably ahead of 1951, and profit will be more satisfactory. Dollar value and profit increase is due to two things, a new price scale which was granted by OPS in the spring and then a second price adjustment after suspension of OPS to equalize the price for that area. The percentage of higher priced ice increased and percentage of lower priced ice decreased this year again as it has for the past several years.

This report continues with comment on the old story that the weather plays a very big part in the ice business, this correspondent feeling that it was used as an alibi many times to cover up lack of sales effort. However they had an October that set new records for high temperature and tonnage was 30 percent above 1951, then a November that went to the other extreme and tonnage was 22 percent below 1951.

Another Oregon distributor reports ice sales up due to increased icing of refrigerator cars.

In Tennessee, although they experienced one of the warmest summer seasons in several years, ice sales for the year were down approximately ten to fifteen percent in dollar volume and the tonnage volume was down even more than that. The decrease in sales is attributed to the fact that more people are buying mechanical refrigerators each year. Produce and car icing were off this year also, due to the short crops of vegetables, and the movement of perishables by truck rather than by railroad continues to increase.

Another Tennessee distributor reports that sales were up about five percent in tonnage and about the same in gross revenue. They are receiving higher prices for certain types of ice but certain switches in heavy tonnage to the lower brackets offset this.

Costs Continue Up

COSTS appear to be up again and not in line with income, but at the same time there are indications that they are beginning to level off. Several factors seem to have a favorable effect, including more efficient use of work force and mechanical controls and increased prices and in some cases increased sales, which improved the profit position. In most cases reports of increased costs came from companies which also reported decreased sales.

A Canadian company reports that wages and materials advanced steadily in cost and call for more economic handling rather than an increase in price.

An Illinois distributor says that costs were in line with income and

although profits were not as good as in former years, they were very satisfactory.

An Alabama concern reports that costs were up, with sales off 20 percent in both tonnage and dollar volume.

From Georgia over-all costs were reported the same as they were a year ago, but the decrease in volume raised the unit cost per ton.

From Kansas comes a report that 1952 costs were very little over those of 1951, although truck maintenance was up about five percent.

An Eastern company reports that costs were higher and not in line with income.

A Missouri distributor reports that costs were fairly in line with the year before, but higher than previous years.

In New Mexico, according to one operator, costs were higher in spite of the fact that for seven years he has carried on a program of installing new machinery and working toward more efficiency. Main increases in cost were for labor and delivery.

A New York distributor says they were able to keep costs pretty well in line with income, despite the fact that hourly rates have been increased considerably in the past several years. This has been accomplished through more efficient utilization of the work force and closer supervision. Also through installation of automatic controls on compressor, which enabled them to eliminate the third shift during the off season. They were also able to cut down the number of men required in the ice sizing operation through the installation of screw conveyors for removing waste snow, and roller conveyors for moving bags of ice, etc.

Another New York state distributor reports the cost per ton about the same as the previous year but an increase in price improved the profit position.

In North Carolina the distributor who reported a decrease in sales, said that prices were up.

An Ohio distributor reports that costs of manufacture were about 40 cents per ton less because of increased sales.

Another Ohio distributor says costs were again higher than the previous year, and with this in mind, they raised their prices from 70 and 80 to 80 and 90 cents per hundred and $1.00 on a longer delivery run. They also increased truck icing $1.00 a ton.

From Oregon, the report is that increased costs have been overcome by increased prices and there is a fair possibility of a reasonable profit.

Another Oregon distributor reports costs, particularly labor, increased, with no compensating increase in prices since 1946.

A Tennessee plant reports that their cost per ton for manufacturing and delivery increased with the decrease in tonnage, as labor costs and other manufacturing and delivery costs were up compared with the previous year.

Another Tennessee distributor reports that net profit will be much better this year since costs stayed well in line with increased tonnage.

Sized and Crushed Ice

SALES of sized and crushed ice continue to increase and here too the dollar volume shows a more favorable condition than report on tonnage. The importance of this form of ice to the industry is shown by the fact that many companies report that 50 percent or more, even as high as 75 percent of their sales, are in the form of crushed, sized and cube ice. And this is highly important too from the dollar viewpoint, since this is quality ice and is sold, or should be sold at a premium price.

An Alabama company reports a slight increase in sales of crushed ice over 1951.

A leading Canadian company reports that the use of crushed ice is still small in relation to turnover but growing constantly in volume. Commercial trade, including railway icing, runs about 30 percent of the total with 65 percent for domestic trade, delivered direct and through independents.

Sized and crushed ice is increasingly more of a Georgia company's volume, and represents a class of business that they intend to push next year.

An Illinois distributor, selling only crushed ice, notes a small increase over the previous year and expects continued increasing demand.

A Missouri distributor sells sized ice in three sizes, also cubes in paper and plastic bags. Their tonnage and dollar volume for 1952 was about the same as for 1951. About 95 percent of the crushed ice and cubes sold are for commercial use.

A New Mexico distributor reports that they are selling both sized and crushed ice but no cubes, this accounting for about half their retail sales.

A New York distributor reports the volume of crushed ice about the same, with dollar volume up about 7 percent over 1951. Commercial customers used about 87 percent and domestic the balance of 13 percent. For 1953 they expect a still further decline in domestic sales.

Another New York distributor reports sized ice sales are increasing each year. It is all screened, through a quarter inch screen, an inch and a quarter and a one and seven-eights. Probably 90 percent is for commercial use. Their sales for meat and poultry displays show a nice increase and it is a year around demand.

A North Carolina distributor sells both sized and crushed ice and the tonnage was about the same as the previous year.

An Ohio company says about three-fifths of their tonnage is crushed ice. Their expectation is that crushed ice will grow in demand in 1953. Retail will grow to the extent of bringing the product closer to the consumer, by vendors or houses. That for the company is expensive and will require considerable thought.

Crushed and cubed ice, according to another Ohio distributor, seems to be the answer for dollar volume.

An Oregon distributor sells sized ice in three sizes, beverage, fountain, pulverized, no price difference between beverage and fountain, pulverized lower. There has been a continued increase in the percentage of their sized ice compared to block ice for the past several years; sized ice has gone up, block ice has gone down —each year until now sized ice is 75 percent of their tonnage. It would be more than that if it were not for a few customers who take a heavy tonnage of block ice in the summer months. Percentagewise probably 90 percent of their sized ice is for commercial use, but they have a constantly increasing sale to domestic users and they believe that in both classes it will continue to increase each year. They also believe that these users will be willing to pay a price that will permit its sale at a profit even if conditions make it necessary for prices to go up. They sell no crushed ice and no cubes. They have never sold cubes and they discontinued crushed several years ago finding it unnecessary to have in addition to sized.

Another Oregon distributor reports that although no separate records of crushed ice sales are kept, they continued a good business to commercial users such as fish markets and poultry processing plants.

A Tennessee distributor sells crushed ice, both for commercial and domestic use. Their tonnage in dollar volume for this class of ice increased in 1952 over 1951 and they feel that they will have an increase in 1953. However, as the sized ice tonnage increases, block ice tonnage will no doubt decrease.

Another Tennessee operator reports that about 35 percent of their sales are either sized or crushed.

Produce Icing

SALES of ice for produce appears to be getting under way slowly, probably in low gear as yet since no comparative figures are available as to sales the previous year. Truck icing however offers a growing market and fresh meat icing has many favorable comments. Ice for meat, vegetables and poultry displays gets favorable mention also especially since this market provides a year around demand.

Icing for meat display, a Canadian company reports, is gaining but it requires considerable coaching.

An Alabama company had a small volume for icing vegetables and supplying shrimp boats from one of their plants.

A little meat icing but nothing else yet is reported by an Illinois distributor.

An Indiana company had some produce icing and some meat icing.

A Kansas operator reports some sales to retail stores for vegetable icing.

A Missouri distributor reports a fairly good market for crushed ice for vegetable counters and for poultry and oysters. A few new customers for poultry and meat increased the volume over the year before.

Truck icing with blower equipment was inaugurated by a New Mexico company with about 100 customers during the year.

From New York comes report of a small business in vegetable icing and good business in fresh meat icing which they have been doing for several years.

An Ohio distributor reports a very little produce icing, a drop in the bucket.

An Oregon distributor says there is good possibility for a nice business in vegetable icing, meat icing, and other new developments along that line. They have not done as much as they should have, because it does not fit as well into their business as it does with some of the other ice companies of their city, but they can see possibilities.

A Tennessee distributor says they do not have a large market on produce icing or meat icing, although they do sell some tonnage for that purpose. It has little bearing on their overall picture.

Vending Stations

THE popularity of vending stations is unmistakable, the majority of the distributors indicating successful, and in some cases highly gratifying experience. The pace along this line has been set by a St. Louis distributor who has 70 vending machines in operation and hopes to have 20 additional this time next year. Many others also indicate that they expect to add to their "fleet." Another significant factor is that many companies report increased vending station sales over the previous year, indicating perhaps growing public acquaintance and acceptance.

From Canada, one of the larger companies reports vendors at two of their plants and these do better than three in outside locations, which are more expensive to operate.

A Georgia company reports vending machines have been successful and they intend to install 20 additional stations to develop more of this business.

An Illinois distributor has five vending machines, all very satisfactory. They save a lot of labor and attract many new customers. This company expects to add more vendors.

An Indiana ice company operates twelve vending stations, selling a 50-lb. block for 35 cents and a 25-lb. bag of sized ice for 35 cents.

A Kansas distributor operates one vending machine, selling a 25-lb. block and a 12½-lb. bag of crushed ice.

An Eastern distributor operates two machines, selling a 15-lb. bag of sized ice for 20 cents, a 50-lb. block for 35 cents and a 25-lb. block for 20 cents.

A Missouri distributor has one vendor at the plant for 25-lb. blocks only. It has been very satisfactory, particularly when the plant is closed. They are considering installing additional vendors.

From New Mexico comes a report of five vendors operated at the plant selling three types of crushed ice and two of block ice. In addition, four vending stations are operated which sell one type of sized ice and a 25-lb. block. In the opinion of this distributor vendors are all right if handled correctly and if well located. They introduce considerable mechanical and practical problems and are costly. But they do increase volume and if well located are worth the effort.

This operator says he has been operating them for several years now and has worked out most of the bugs. He first placed them on leased locations but this was not satisfactory. He has since purchased well located lots on which stations are operated by the company and they do very well. In connection with them they sell ice cream, watermelons and cantaloups. These items help to carry the overhead. They find that the mechanical and practical problems involved in vendor operation require an attendant. They close these stations during the winter and operate them for only about five and a half months. Vendors at ice plants operate the year around, but sales are low.

A New York distributor has had in operation at the plant for several years four vending machines, which has enabled them to eliminate a cash and carry attendant. They vend a 50 lb. block of ice, a 20 lb. bag of sized ice and a 10 lb. bag of cubes for 25 cents each, also a 25 lb. block of ice for 15 cents. The vendors have worked out very well for them and they wouldn't be without them.

Another New York distributor reports that they do not have any vending stations but that they do operate cash and carry stations, nearly all of which have attendants and have no automatic vendors and about one-half are under refrigeration. This is necessary where cubes and sized ice are sold in paper bags. In their climate, cash and carry outlets can sell salt, coal and charcoal in bags as well as block ice, bushel and half bushel bags of sized ice, half bushels of cubes and a party size package, therefore an attendant is almost necessary. They find gas stations their best locations.

Another New York distributor operates one vending station, selling a 50-lb. block. Evidently their experience has been satisfactory since they hope to add another.

An Ohio distributor has one ice vending machine selling 25-lb. and 50-lb. blocks at $1.00 per 100 lbs., and wishes they had more as well as cubed ice and crushed ice vendors. These are planned for the future.

A Tennessee distributor operates two vending stations and they find that sales through these machines have been greater this year than last. They vend both block and sized ice. As the demand for sized ice for domestic use increases, they expect sales at these vending machines to continue to increase. They will probably install some more vending machines during 1953.

Another Tennessee operator has in use two vendors, supplying 12-lb. bags of crushed ice and 25-lb. and 50-lb. block ice. They may place vendors at two or three plant locations, but do not contemplate any other expansion at this time. They are satisfied with the operation of venders as far as they have gone, and they do charge much higher prices for this type of service.

Advertising

SPASMODIC, is probably a good description of local advertising, but because of the wide variation between companies, any generalized statement could not be made with any degree of accuracy. A few companies report on organized advertising plan, while others do it only occasionally, and many do practically nothing. One manager says they've tried various mediums but "nothing seems to work."

In Canada, two types of advertising are carried, first that designed to maintain the prestige and good name of the company, such as billboards, street car cards, and second, promotion of actual sale by personal canvass and distribution of folders and calendars.

A Georgia company manager says he feels they are somewhat representative of the ice industry in general in that they have done too little to merchandise their product and have not made sufficient effort to convert the opportunities for increasing ice sales as developed by research into actual increased business. They are firmly determined to sell more ice in 1953, and are planning an ice-merchandising campaign in which some time during the year, they will have special emphasis put on all new uses for ice, from the sale of packaged ice to mechanical owners down to meat-on-ice, poultry icing, and ice for hydro-cooling.

An Illinois distributor reports that their advertising appears to have been ineffective and for next year they are figuring on eliminating newspaper and radio advertising and using an enlarged program of direct mail.

A Kansas operator depends upon distribution of souvenirs for the bulk of his advertising.

A Missouri distributor advertises regularly in both daily papers and on the local broadcasting station.

Opening of the ice season in the Spring, and inauguration of a new vending station are the only occasions for advertising by a New Mexico distributor.

A New York distributor runs consistent advertising during the summer season, mostly a small newspaper ad on packaged cubes and crushed ice and the availability of 24-hour automatic vending service. They also run occasional ads on picnic coolers, and have been selling about 150 a year for several years.

Another New York distributor believes it is necessary to advertise if they hope to sell. They prefer direct by mail advertising, supplemented by newspaper. Calls made by salesmen are also necessary. They look to the route men to help in the distributing of their advertising material.

An Ohio distributor uses 15 second spot radio advertising, two spots daily, utilizing the factor of repetition to the best advantage, retaining the same wording for a period of six months or longer. They advise all ice men to start advertising, then if they cannot see any results whatsoever after two years, they may contemplate changing their medium, but continue advertising.

An Oregon distributor admits that they do not do as much advertising as they should probably. They find the best return from direct local house to house distribution, direct mail, and newspaper, in the order named, although possibly this may be due to the better ability to really check on results in the same order.

Another Oregon distributor did no advertising in 1952 and does not intend to do any in 1953.

A Tennessee operator does advertising the year round, both newspaper and radio, shifting the emphasis from ice to coal as the seasons and conditions demand.

Selling More Ice

THE necessity of expanding sales of ice is recognized and to attain that end an interesting assortment of ideas are offered. New markets are pointed as a possible avenue, the value of continued good service and reasonable prices is stressed, making ice convenient and easy to buy, producing a quality product and making it known, more vending machines, are some of the other suggestions offered.

Expansion, according to a Canadian distributor, lies along the increased use of ice for air conditioning of railroad coaches, ice in mesh bags for dairies, crushed ice for restaurants and taverns, and cubes, the bulk of which are used by those who have electric refrigerators.

An Illinois distributor advances the thought that the industry will never attain the high tonnage of 1946 again and that their thoughts should be turned toward building the market for processed ice. He suggests that a way should be found to furnish containers for home use and persuade people to quit fooling around with home made cubes.

To open up or enlarge the market a Kansas distributor suggests continued good service, a good product, and reasonable prices.

An Eastern distributor sees possibilities in pushing the meat-on-ice program and other types of luxury ice.

A Missouri distributor says that without doubt the real need of the ice industry is more tonnage. The main field for more ice sales is commercial, they think, and supplying wholesale ice to other small plants which can be closed down and ice can be sold to them cheaper than they can make it. This company is now supplying two neighboring towns which use about 1000 tons each per year.

Another solution, from New Mexico is constant and continuing efforts to make ice convenient and easy for customers to buy.

A New York distributor thinks the market for ice can be helped by rendering good service, better advertising and selling. The industry must have a quality product and deliver a clean pure product. A recent test by a bacteriologist of their ice showed it to be purer than the city water from which it was frozen. It is known that ice in melting washes itself, therefore if it is properly handled by the customer there is no purer article of food.

The present situation in that locality leads an Ohio distributor to the conclusion that the grocery store is their biggest asset due to meat-icing and vegetable-icing being year round business. Their summer sales are well above their production but even so, they will take all peak season sales they can get. Labor saving devices of all kinds, as well as careful and exacting operation of production must be employed to limit costs at the lowest possible point. Although the national average of ice prices are well under what most people will pay for service, they definitely cannot say, "the sky's the limit," for ice prices.

An Oregon distributor believes that there is a good future for the ice business, and that it will develop if the industry makes the ice wanted available, and give the customer service that can be depended upon.

Another Oregon distributor reports that their principle interest is in refrigerator car icing which in this area is directly dependent on size of frozen pack.

The Outlook for 1953

IN GENERAL, the outlook for 1953 looks a bit more cheerful but this is qualified by a few inevitable pessimists and recognizing the need of a good hot summer for improving ice sales. Some of the factors that it is hoped will lead to better business including the fact that new markets which are beginning to absorb lost domestic business are getting better established, g r o w i n g commercial

(Continued on page 57)

The Problem of Sanitary Ice—Educating Users on How to Protect Quality

A WARNING and information in regard to handling the problem of sanitary ice is covered in a Bulletin issued recently by C. P. Austin, director of the Research and Engineering Department of the National Association of Ice Industries.

Sanitation of eating establishments, it points out, is of increasing interest to public health people and to the public. We know this for a fact, and it is substantiated by reports which trickle in to us from all parts of the country.

To be more specific, a paper on the sanitary quality of prepared ice as dispensed in eating and drinking places was presented at the recent national meeting of the American Public Health Association. Some 5,000 health people attended these sessions. They were from your state and mine, and probably from your city and mine. Health officers who did not hear the paper will have an opportunity to read it when the proceedings of these meetings are made available to the membership of the Public Health Association. In any event, the paper will serve to further stimulate and focus interest of local health departments on the handling of ice in eating places.

Is is a Food

As iceman, we cannot afford to ignore these developments. After all, ice plays a vital and significant role in the successful operation of eating and drinking places. These establishments are large and valued customers of icemen everywhere. True, not all of the ice used in these places is made by nor purchased from members of our industry, but we must recognize the trend. Regardless of whether the restaurant owner makes his ice in the back room of his place of business or buys it from an ice company, ice, along with other foods and services of his business, will hereafter probably receive more cautious scrutiny from health officers.

The difficulty of exercising any control over the handling of our product after it leaves our possession has always been recognized. We know that despite the exacting care and rigorous precautions which have gone into safeguarding the quality and purity of ice during its freezing and processing, food ice must be handled and dispensed safely until it is finally consumed.

As icemen, we may not be able to exercise very much control over our product after it is delivered to our customer. On the other hand, there are three things which we can do: (1) We can make full use of the power of suggestion to get our customers to do everything possible to protect the quality and purity of the ice which has been delivered to them. (2) We can rededicate ourselves to the ever present and generally recognized job of being sure that our product complies with top sanitary standards. (3) We can cooperate with the health people of our community in effecting and carrying out sound and realistic programs for proper sanitation of our product from point of manufacture to ultimate use.

On item (2), manufacturers and dispensers of all food products are constantly faced with the problem of sanitation. In some cases violation of reasonable standards occur because of negligence. In other cases they may be due to accident. But frequently they occur because most foods are more or less perishable. They deteriorate with age. Fortunately ice does not lend itself to this latter type of spoilage. It merely melts. Therefore our sanitation problem is primarily a matter of freezing water of proper quality; prohibiting foreign materials from getting into the ice during freezing, processing, and delivery; and observing good rules of cleanliness.

Sanitary Precautions

Certainly there is no better time than now to give thoughtful study to all of the sanitary precautions which are in effect in your operation. If there is any step in the making, processing, or delivering of ice which you would not be proud to invite your local health officer to see, then your sanitary program needs revision. Be sure of the quality of your water. Back away from the plant and take a good look at it. Look at it through the eyes of a health officer. They look for ice coming in contact with walkways. They check to see whether tank tops are in good condition and clean. They examine the shoes of the employees to see whether dirty shoes come in contact with tank tops and storage room floors. They will want to know whether smoking and chewing are permitted in the tank room. They will examine the dip tank. They will look for appropriate signs and check to see that health rules are rigorously enforced. In other words, the problem is essentially a matter of a well organized and carefully thought out program plus good housekeeping.

In making your analysis, study your employees and compare them with the employees of other industries where food is handled. Know what takes place on the routes. Examine the containers. Are bags which are used over again properly cleaned between trips? Be sure that any ice sample which could be lifted from a bin or from a container, regardless of whether it is in the plant or on the delivery route, meets top sanitary standards. Finally, let's be sure our training programs keep the fact that prepared ice is a food ever present in the mind of each employee.

Sanitation is important to the entire industry and it's important to you. As a member of this industry, you are aware that collectively we have spent millions of dollars in educating the American public to the fact that our product is pure. We doubtless have spent much more in trying to make ice pure and keep it pure. The entire chain cannot be stronger than its weakest link. Every plant and every distributor, yes, every bag of ice, is a link. Any weak links serve to dissipate our tremendous investment in goodwill.

Newspapers Welcome Ice Men to Convention

THE "homecoming" of ice men of the nation for the 35th annual convention of the National Association of Ice Industries in Cincinnati last November was welcomed as a newsworthy event by all newspapers in the Queen City, and by many outlets elsewhere. Advance stories ran in the local papers as early as July. Newspapers, wire services, radio and TV outlets were visited by NAII representatives the week before the convention opened, and supplied a steady stream of releases through the final session. Stories, many with photos of speakers, appeared daily. The ice-carved eagle prepared for the banquet earned a three-column picture. F. X. Timmons of the National Association made his television debut on WCPO-TV; interviewed as guest on a "home service" program, he told of the domestic uses for Iceman's Ice and illustrated with photos.

Senator Taft's surprise call aroused immediate interest among city editors and brought a page one story Friday. Convention speeches and merchandising developments discussed will furnish material for trade magazine articles during several months to come.

Reports from Unit Ice Associations

Delta States Holds Annual Convention

THE 1952 Delta States convention was considered officially opened when the delegates, their wives and guests assembled for the President's Social Hour on Sunday evening, November 23 at Hotel Heidelburg in Jackson, Miss. While the refreshments were excellent, of far more importance was the renewal of friendships and making the acquaintance of new ice industry personnel.

First Business Session

The opening session was called to order by President J. C. Phillips on Monday at 10:00 a.m. The invocation was given by Rev. Charles Lyle, pastor of the St. Andrews Episcopal Church, Jackson, address of welcome by Bryant Horne representing Mayor Allen Thompson of Jackson and the response by Lee Gutierrez, Biloxi Freezing Co., Inc., Biloxi, Miss. Treasurer E. L. Wise delivered his report in detail.

Secretary Bob Milling in his annual address stressed the sanitary aspects of the ice industry and the urgent necessity of handling ice as a food product. He set forth too the necessity for economy in production, availability of ice and advertising at the local level.

President Phillips reviewed his experiences in the ice business at Hattiesburg, Miss., for the past 22 years. He highlighted the procedure that he has been using since 1940 to promote the growing, packing and shipping of fresh vegetables to northern markets. This project has developed into a year around business for the small farmers in and around Hattiesburg and consequently has opened a market for considerable year 'round ice tonnage.

Hidden Profits

"Hidden Profit Leaks in the Ice Industry" was the subject developed by Max K. Doehler, Jr., Asst. Manager, Bruce Dodson and Co., Kansas City, Mo. He gave a clear analysis of the average operational procedure of ice companies. Mr. Doehler stated that if ice manufacturers would eliminate the existing hazards in production and delivery of the product, the money that could be saved on insurance premiums would go far in offsetting loss of revenue resulting from reduced tonnage. The poor operational practices in use, he stated, included burning of trash, ice on floor of storage room, unguarded belts, machinery, ice crushers and scoring machines, lack of cleanliness, etc.

Improper selection and training of personnel also caused many major accidents. A great number of employees are constantly hired to operate machines and trucks without proper medical examinations or checkups on past work performances to determine fitness for their jobs. Mr. Doehler further pointed out that practically all of these hidden costs could be eliminated by close supervision on the part of owners and operators. It was quite a shock to have him reveal that the ice industry is rated as the second most hazardous one in the country. Insurance rates are presently very high and unless management corrects the occupational dangers of the ice industry, the rates will soon be almost prohibitive.

Panel Discussion

A mimeographed outline of subjects to be discussed at the Monday afternoon session was presented to each delegate to facilitate keeping to the pertinent topics and assist in formulating questions. The panel included "Customer Acceptance of Block Ice, Sized, Mine Run Crushed and Cubes; Availability and Quality; Sanitation at Point of Origin and Point of Use; Advertising at the Local Level; Meat on Ice Program, etc." The audience participation was excellent but the afternoon far too short to cover adequately all phases of the program.

Third Session

First Vice-President J. W. Dawley presided at the third session Tuesday morning. Initially on this session was C. T. Baker, consulting engineer, Atlanta, Ga. Mr. Baker, under the auspices of the Mississippi Power & Light Company, prior to convention had visited many ice plants in and around the Jackson area. Operational practices which had been observed were utilized in a portion of his address. Various phases of manufacturing ice and preventable maintenance were discussed thoroughly and the audience was invited to ask any questions they wished.

Mr. Baker's discourse was exceptionally informative and enlightening and again showed how ice manufacturers could improve their product and save money at the same time. A mimeographed copy of Mr. Baker's address entitled "Factors Making for Increased Operating Costs in Ice Plants" was given to every delegate for future reference. This paper will be of inestimable benefit to plant operators in readying their plants for 1953.

Frank G. Smith, industrial-commercial sales manager, Mississippi Power & Light Company, Jackson, Miss., responsible for Mr. Baker's program participation, told of the program inaugurated by the power companies of the mid-south (Arkansas-Louisiana-Mississippi) to further progress by rendering every assistance possible to agriculture, industry and business in their areas of operation. Free technical advice and data is available for those who wish to take advantage of such service. When industry, agriculture and business in the mid-south area unite for prosperity, the future of that region will be assured.

Report from National

Guy W. Jacobs, executive secretary, National Association of Ice Industries, Washington, D. C., gave a very interesting talk on the National Association. He told of their efforts to have ice prices decontrolled and this accomplishment had provided relief in hundreds of markets where loss of tonnage coupled with increased cost of operation had been inflicting hardships. The NAII legal department is constantly on the alert to combat rules and regulations that would prove a burden to the ice industry. The Research Department has made tremendous strides in unearthing new markets for ice. Hydrocooling, sweet corn icing, vegetable icing, poultry icing, meat-on-ice and other outlets for ice are constantly increasing due to the hard work and diligence of the alert NAII personnel. The Meat-on-Ice program promises unlimited possibilities for even the smaller markets and this particular outlet is just in its infancy.

Customer acceptance of many of the programs sponsored has been largely due to the National Advertising Campaign, he said. National recognition has been awarded the ice industry for the effectiveness of their advertising media. Mr. Jacobs stated

that the necessity for continuing the advertising program on a national scale is apparent to all who have analyzed the results, and since processed ice sales are so rapidly increasing, they should be given added impetus through a new advertising campaign. Inasmuch as processed ice sales run into dollar volume rather than increased tonnage, it has been suggested that two percent of the dollar sales of processed ice be the basis for financing this new campaign at the national level.

Final Session

Presiding at the concluding session was N. A. M. Jackson, Second Vice-President, Jackson Ice Company, Maringouin, La.

W. J. Ayers, Standard Ice Company of Memphis, Tenn., and president of NAII, was the first speaker of the afternoon. He painted a most comprehensive picture of the operations of the ice industry throughout the past quarter century. Tonnages, prices and problems were reviewed from the advent of mechanical refrigerators through the high tonnage of 1947 and on to the present era. Parallel histories of several major industries were outlined to show that problems just as great and even greater exist in many other instances. Mr. Ayers stated that profits rather than tonnage should govern our future actions and that the prosperous ice men of tomorrow would be those who utilized to the fullest the latest developments in production, sales and advertising.

Advertising

"Advertising . . . The Cold Facts." This subject was presented by Max Fetty, advertising and sales promotion manager, Delta Tank Mfg. Co., Inc., Baton Rouge, La. Mr. Fetty proved to be an authority on advertising as well as a keen humorist; his facts were both interesting and thought provoking. He advocated advertising of ice as a valuable spur to increased sales. To secure most beneficial results you should keep your name and your product constantly before the buying public; intermittent advertising, at its best loses momentum. Also he stressed the need of the ice industry to advertise at the local level, predicting that constant, judicious use of available advertising media could lift our ice industry to a level of prosperity beyond our fondest dreams.

Officers Installed

The impressive installation of officers who will guide Delta States Ice Association during 1953 was effected by Joe Henry Morris Ice Company, Jackson, Miss. President, J. W. Dawley, Southern Ice Company, Dallas, Texas; First Vice-President, N. A. M. Jackson, Jackson Ice Company, Maringouin, La.; Second Vice-President, E. F. Hutson, Houston, Miss., and Treasurer, E. L. Wise, Warren Cotton Oil & Manufacturing Co., Warren, Arkansas.

Entertainment

The entertainment program started with the very enjoyable President's Social Hour Sunday evening, November 23. On Monday, November 24, the ladies were entertained with a luncheon at famous Le Fleur's. To quote the ladies—the food was exotic, the table decorations beautiful in autumnal motif and the sixteen door prizes delighted the lucky winners. The remainder of the afternoon was enjoyed touring the Capitol and the Governor's Mansion, where the ladies were entertained in true southern fashion.

The bingo game on Monday evening was lots of fun, as always. The many prizes donated by the associate members had been on display for 24 hours, and everybody was anxious to "bingo," hoping to win one of the gifts they especially favored.

Mrs. Joe Henry Morris was hostess to the ladies at a coffee hour in the Morris ancestral home on Tuesday morning and while enjoying delicious confections visited together.

Climaxing the entertainment features, on Tuesday night, November 25, the annual banquet, floor show and dance was enjoyed in the Victory Room until the wee hours.

Canadian Ice Conference

A MID-WINTER ice conference, sponsored by the Canadian Associatiton of Ice Industries will be held at the Hotel London, London, Ontario, Monday, January 19 to discuss their problems and exchange ideas.

Featured on the morning session will be topics on sized ice based on economical methods of sizing and handling, along with effective promotion of sized ice. The profitable operation of away-from-the-plant vendors will be presented and both these papers will be followed by discussion periods.

The afternoon session will be devoted to an open forum where questions sent in by members will be discussed.

Oklahoma Association of Ice Industries

THE Oklahoma Association of Ice Industries has scheduled its annual convention for the Mayo Hotel, Tulsa, Oklahoma, January 18, 19 and 20, 1953. Arrangements for the convention have been made by the convention committee consisting of the following officers: Earl Johnson, president; C. E. Payne, vice-president; Paul Liebmann, vice-president; Clyde Simmon, treasurer; Harry T. Hudson, Jr., executive secretary and general counsel.

Details are not as yet complete but business sessions will feature such outstanding ice industry personalities as Paul Andres, president of the Southwest Ice Industries, Oklahoma City, Okla., and first vice-president of National Association of Ice Industries; Guy W. Jacobs, Executive Secretary of National Association of Ice Industries, Washington, D. C. The Honorable Johnston Murray, Governor of the State of Oklahoma, will be the after-dinner speaker at the convention banquet, Monday night, January 19, 1953.

An unusual and inviting feature of the scheduled entertainment is the fact that it will primarily be furnished by the Phillipettes, a 30 feminine voice chorus composed of girls employed by the Phillips Petroleum Company of Bartlesville, Okla. They will have a prominent part in the entire festivities of the evening's program.

Missouri Valley Ice Manufacturers Association

A. V. ESPHORST, Secy-Treas.

AN INTERESTING program has been arranged for the joint convention of the Kansas Association of Ice Industries and the Missouri Valley Ice Manufacturers Association January 12-13, 1953, at Hotel President, Kansas City, Missouri.

The following subjects will be discussed: The ice industry today; Small ice plant profits; Ice plant operation safety; Power rates for ice plants; Vending operations in large and small plants; and the National Association convention.

An Open Forum Session will be held Tuesday morning, when questions submitted by ice men will be answered by the panel members. A luncheon will be held Monday, January 12, at which the speaker will be Robert L. Burnes, Sports Editor, St. Louis Globe Democrat.

An outstanding floor show has been promised by the Entertainment Committee for the Dinner Dance which will be held in the convention hotel Monday evening, January 12.

Canadian Association Of Ice Industries

MILDRED E. CROFT, Exec.-Secy.

THE Canadian Association will hold its annual mid-winter conference at the Hotel London in London, Ontario, Monday, January 19. These conferences have been held for a number of years in addition to the annual conventions and it is felt that Association members who cannot afford three or four days away from their business, can take one day to attend a conference. Of course it is more of a local nature but nevertheless we see many of our members at these conferences whom we do not see at conventions.

The morning session will be devoted to two subjects: (1) The effective preparation and promotion of packaged ice and (2) Making outside vendors profitable. By outside vendors we mean vendors away from the plant.

The afternoon session will be devoted to a panel discussion. A questionnaire similar to that of the National Association was sent out to each of our members. We are looking forward to an interesting afternoon.

The fund raising campaign for national advertising is underway and present indications are that there will be just as much money contributed for 1953 as there was for 1952.

Northwest Association Of Ice Industries

L. F. MARSH, Secretary

THE season of 1952 has been rather a good one for the Northwest ice industry in spite of unfavorable weather the first part of the season.

Generally speaking the northwest ice companies are among the most progressive and can be expected to be among the first to cash in on any new developments that come up in our industry. This is true with meat on ice, the same as it was true with crushed ice for vegetables, poultry, sized ice in paper bags etc. Several companies here have done a very good job in developing a market for meat on ice and report quite a lot of tonnage in this one outlet.

It is a safe assertion that every company selling sized ice has increased this business this year over last, and sized ice now is being put out by nearly every company in this district. Many companies report more than 50 percent of their business is sized ice.

The use of sized ice for domestic trade, or party trade, is very generally on the increase. The price obtained for this class of ice is attractive to the ice companies as it is high enough to permit a profit, yet it is not objected to by the consumer.

There have been a number of vending machines installed in various cities and they are reported as being well liked and fill the need for some way of making ice convenient to the buying public at a price that can cover the cost of operation. A point in their favor is that prospective customers know where and when they can buy ice when they want it.

There seems to be no question that 1953 should be a good profitable season for the Northwest Ice Industry unless something unforeseen comes up to change normal expectations.

Plans are already well started for the coming convention in Victoria, B. C. March 25-6-7. A convention that will have real value to every one who attends is assured, every Northwest Ice man should plan on being there to take part in and listen to the discussions.

Report on Hydro-Cooling

THE final release on the peach hydro-cooling research is now available from the Research and Engineering Department of the National Association of Ice Industries it was announced recently.

This report is based on the second year's work of a two-year project which was sponsored at Michigan State College. It was published in the Quarterly Bulletin of the Michigan Agricultural Experiment Station, August 1952. As a result of this exploratory work, a new method of handling peaches was found. Greater maturity of the fruit was possible through removal of field heat by an ice water bath. Peaches were hydrocooled this year in the commercial growing areas of Michigan, South Carolina, and Arkansas. Plans are already being made to use the method next season in the Southern Illinois peach area.

American Ice Seeks Stock

THE American Ice Company has asked for tenders of its 6 per cent non-cumulative preferred stock at prices not exceeding $100 a share. The company has appropriated $600,000 for purchase of the stock from holders for retirement but may increase the amount if it is deemed advisable. There are 17,747 shares of preferred outstanding.

The Ice Industry

Retaining and Expanding Domestic Ice Tonnage

AT THE recent Canadian Ice Convention, a talk on retaining and expanding domestic block ice tonnage was given by T. W. Rutherford, T. A. Rutherford and Son, Galt, Ontario.

Mr. Rutherford pointed out that the first necessity of an ice distributor is to have good servicemen, properly trained. If the service man is not courteous, considerate and helpful at all times, the manager had better find it out because he is the most important man in any ice delivery business. Besides taking care of his daily deliveries he should make a definite number of solicitation calls every day, calling on every home to find out what refrigeration they have and always offering his services.

As a producer the ice plant must make good ice. He cannot afford to make ice that leaves a residue of lime or mineral color in the bottom of the ice compartment when it has melted. This is a problem that the ice industry must meet because a lot of people get "fed up" with ice refrigeration because of slime plugged drain pipes and other "nuisances" that seem to go with ice service.

In this connection Mr. Rutherford suggested that the association might make a cooperative attack on this very important problem. Ice associations the country over, he said, have been for some time doing an excellent job of publicizing and recommending improved design for refrigerators and he thought that this could well be continued.

He told his audience that people will continue to buy mechanical refrigerators because they think they are fashionable and "to keep up with the Joneses." This cannot be prevented he said, so he advised them to stop worrying about it but devote their energies to providing top quality ice service which must include eliminating the nuisances which cause many people to turn to mechanical refrigerators.

1953 National Ice Convention

FOLLOWING the election of officers at the annual convention in November the Board of Directors of the National Association of Ice Industries officially decided upon the Hotel Statler in Washington, D. C. as the location of the 1953 convention. The dates will be November 17-20, 1953.

Industrial Safety Work in Food Industry

THE importance of a well developed safety program and the problems of conducting such a program in the food industry were brought out at meetings held in connection with the National Safety Council at the Morrison Hotel, Chicago, October 22 and 23.

Wednesday afternoon a round-table discussion was held by safety engineers representing the Ice, Cold Storage and Locker Plants Division, of which Sloan Childers, Southwest Ice and Dairy Products, Oklahoma City, is chairman. Participating in this discussion were M. H. Selig, City Products Corportation, Chicago, and W. F. Leonard, Jr., Southland Corporation, Dallas, Texas.

Mr. Leonard explained that his company operates in 42 cities. At each plant a staff meeting of supervisors and managers are held once a month. This is an all-day meeting at which general problems are considered and an hour is given over for discussion of safety. The supervisors are responsible for safety and they have regular meetings at which they give out safety instructions. In addition, lost time accidents are analyzed and causes and remedies are sought. With each pay check a circular on safety is distributed to each employee.

The balance of this session was used for informal discussion of the safety programs and plans used by each company. Practically all the companies represented, reported difficulty in getting the right type of help and having to use inefficient help which made their safety problems more difficult. On the other hand it was brought out that a well paid and satisfied employee is pretty apt to have the best safety record.

Food Section

At a session of the Food Section held Thursday afternoon a practical program for safety training was presented in a paper by J. R. McCann of Ralston Purina Company.

Mr. McCann explained that his company's safety program is based strictly on practical rather than theoretical considerations and this has led to a tie-in between safety and shop training. The safety organization is divided into staff and line personnel, the line organization having the responsibility of getting the work done and the staff having the responsibility of labor relations and personnel. The organization is made up of the president, vice-president, foremen and workman. Besides the responsibility of getting the work done these men also are given whatever authority may be needed. The staff organization, as a part of its work, is responsible for accident prevention, fire prevention and other safety measures.

One of the first duties of the safety engineer he said, is to sell top management, middle management, the foremen and the workers. All safety work is aimed at one of those four groups. The job of those directing safety work is to create interest and sell the foremen and workers on their responsibilities and, secondly to provide them with the necessary help and the tools needed to do their work.

It is recognized, he said, that top management has many things with which they must be concerned and frequently they have to be especially impressed with the importance of safety. One way of doing this is by pointing out the big accomplishments of safety work such as lives saved and accidents prevented, all of which can be converted into dollar savings.

Middle management is interested primarily in production, also costs and sales. They also are interested in performance and especially of safety records of their departments and plants. They will be chiefly interested in "How to do" suggestions.

The foremen also are primarily interested in production but they also are interested in the costs and quality of workmanship and they can be shown how safety work is connected with these primary objectives. It is the duty of the safety engineer to provide them also with full information and tools with which to accompany their safety work. It is most important in this connection to let the foreman know that the company regards safety as very important.

The chief aim of all safety work, he said, is to educate the workers and once interested these workers will be a big help to the foremen in passing along safety information to others.

Panel Discussion

A panel consisting of four foremen held an informal discussion on the place and responsibility of the foremen in safety work. The discussion was led by W. F. Leonard, Jr. of Dallas.

One of the difficulties of getting the safety idea across to some workers is that they do not know what the speaker is talking about. These points can be visualized and brought home to them by having a worker, who has suffered an accident, appear and tell what happened. It was suggested also that too much responsibility for safety is placed on top and middle management and that the foremen could assume more of this responsibility. One important method of getting the worker interested in safety is to develop loyalty to the company and this loyalty will help him to try to avoid accidents and to help others to do likewise.

Some foremen, it was pointed out, are not speakers and find it very difficult to get up before a group of men and give a talk on anything. As a means of helping them in this respect it was suggested that they be given talks already written. Then, after a few such talks, they will be able to approach the task better prepared. The foremen also can be greatly helped in their work by getting expert and technical advice from the engineers and others.

Room Air Conditioner Sales

THE Air Conditioning and Refrigerating Machinery Association has released its estimates of manufacturers' shipments in the year 1952. These estimates for 1952, given below, include shipments by all manufacturers, both ACRMA member-companies and non-members. The figures for 1951 are manufacturers' shipments as reported to the Bureau of the Census.

Room Air Conditioners	Units	
	1952	1951
Window-sill type	330,770	228,964
Console (floor) type	10,230	8,526
Total	341,000	237,490

Based on a comparison of manufacturer and distributor inventories at the beginning of 1952 and inventories near the close of the year, 412,000 room air conditioning units are estimated to have moved into dealer hands during the year. The 412,000 unit figure is believed to at least approximate the actual sales of room air conditioners to users during 1952. Dealer stocks at the end of the year are known to be substantially less than in January, 1952, but actual figures are not available.

New Dry Ice Plant

OFFICIALS of Colorado CO-2 Corp. plan construction of a large dry ice plant 25 miles south of Los Animas, Colo. The plant will be constructed on a 75 acre tract purchased from the Stough ranch about three miles north of Nineview where carbon dioxide will be piped from the gas field located about five miles southwest.

Refrigerated Warehousing Industry

NATIONAL ASSOCIATION of REFRIGERATED WAREHOUSES

Division of American Warehousemen's Association

Executive Offices
TOWER BUILDING, WASHINGTON 5, D.C.

Executive Vice-president
WM. DALTON, WASHINGTON, D.C.

Secretary
JOS. H. COLQUITT, WASHINGTON, D.C.

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Treasurer
CHAS. B. HART, TACOMA, WASH.

THIS MONTH IN BRIEF

The Annual Review of the Refrigerated Warehousing Industry shows that occupancy was up and freezer space still in such demand as to require considerable conversion from coolers to freezers and new construction of freezer space during 1952. Increased volume helped to narrow the spread between costs and income.

Occupancy of cooler space declined one point, while freezer space remained about the same during November. During the year there was increased holdings on the whole, some commodities being up and some down. Those showing gains included frozen meats, frozen poultry, shell eggs, frozen vegetables and frozen fish.

The Fact Finding Conference of the Institute of American Poultry Industries will present an analysis of the effect of population increase on the future of the poultry and egg industry.

1952 Was Good Year For Refrigerated Warehouses— Good Prospects for 1953

THE YEAR 1952 was another good year for the refrigerated warehousing industry, with occupancy up and freezer space still in such demand as to call for considerable conversion from cooler to freezer space and addition of new freezer space during the year. The outlook for 1953 continues good, with expectation of the same or possibly higher occupancy, according to most of the reports.

This compilation of answers to a questionnaire sent to all leading warehouse operators, is an annual feature of ICE AND REFRIGERATION.

Frozen foods continues this year as the most important storage commodity, both from the standpoint of the amount of space used and the increased usage over previous years. Aside from this, the old staple standbys such as eggs, meats, dairy products, fruits, and fish, made up the bulk of commodities stored. In these days of satisfactory occupancy the idea of new commodities do not seem to generate great interest, although storage batteries are considered good prospects for increased future business, and synthetic resins, candies and canned goods are mentioned along with other products.

A new subject in the survey this year, that of transportation, disclosed some information, chief of which is that there has been a considerable shift to truck shipments, to the extent that probably about half of the commodities headed for storage are moved by that method.

Another new subject, that of source of products, shows that most of the houses reporting in this survey are near producing areas and hence most of their products move in from those areas and for them storage-in-transit is a minor part of their business.

Again this year, costs of doing business were up slightly, but this does not seem to have developed into the problem that it did in former years. Increased volume, has, in most cases, provided sufficient revenue to narrow the spread, and the rate of increased costs has slowed down some.

Percentage of Occupancy New Space Added

SPACE occupancy during 1952 on the whole was up as compared to 1951, although there were reports here and there of the same or slight decreases. Cooler space in some instances was converted into freezers, and this throws comparative figures somewhat out of line. Generally, the outlook for 1953 is favorable, with prospects for the same or better occupancy. In addition there was an increased amount of new freezer space

From San Francisco comes a report that there has been a considerable conversion of cooler space to freezer space during the past year in addition to new plants and expansion of present facilities, but freezer occupancy during 1952 was still higher than 1951. Cooler occupancy showed a slight downward trend.

Another California warehouse reports some increase in 1952 with prospects for 1953 about the same. This company added considerable freezer space during the year.

A Modesto, Calif., warehouse reports a slight increase in 1952 and approximately the same for 1953. No new space was added.

A Boise, Idaho, warehouse reports a much greater occupancy during 1952—nearly full. No new space was added but some convertible freezers or coolers were used, and they expect to refrigerate another 75,000 cubic feet during the coming year.

A New Orleans warehouse reports a 10 per cent increase in occupancy

for both freezer and cooler space, with expectation that 1953 occupancy will equal that of 1952. This company is now adding two zero and lower temperature holding rooms which will add approximately 100,000 cubic feet to its freezer space.

Another New Orleans warehouse reports an occupancy of 75 and 90 percent compared to 70 and 80 percent for 1951. For 1953 a similar increase is expected. They plan to convert cooler to freezer as soon as feasible and when costs drop a little.

A Portland, Me., warehouse reports a slight decrease in coolers and freezers remained about the same. For 1953, they expect their cooler space to be down a bit and freezer space to hold its own. Although no new freezer or cooler space has been added, an additional 15,684 cubic feet of freezer space previously rented will be available.

Total volume of all commodities for a Detroit warehouse was some 5 million pounds more than for the same period of 1951.

A Duluth, Minn., warehouse reports about the same occupancy as for 1951 and with no additional space added, no appreciable changes are expected for 1953.

A Minneapolis warehouse reports about the same volume as for 1951 and they do not look for much change in occupancy in 1953, unless the war situation changes from hot to cold.

A Bridgeton, N. J., warehouse reports percentage of occupancy for 1952 about the same as that of 1951. However toward the end of the packing season they were completely occupied. Their expectations for 1953 are about the same.

Elmira, N. Y., reports the percentage of occupancy for 1952 compared very favorably with 1951 and they expect it to maintain its high average for 1953. They did not build any new space in the past year, but they do hope to do some conversion work in 1953.

In Fargo, N. D., occupancy was about the same as last year. This company has not done anything about adding new space but there's a feeling that something will have to be done in the near future.

A Dayton, Ohio, warehouse reports greater occupancy in 1952 than in 1951. During the year they added some 50,000 additional cubic feet of new freezer space. There was no conversion of cooler to freezer space but they do have the facilities to do so if needed.

In Philadelphia, occupancy was up 15 per cent and they expect a further increase in 1953.

A Nashville, Tenn., warehouse reports occupancy for 1952 approximately the same as for 1951 and they expect use of increased freezer space in 1953. This company has converted 140,000 cubic feet of cooler to freezer space and is in the process of converting 150,000 cubic feet formerly used as ice storage to freezer space.

A Houston warehouse reports that percentagewise 1952 occupancy compared favorably with 1951. They see no reason for a decrease in 1953. They are adding approximately 150,000 gross cubic feet of sharp freezer space and additional blast freezer space of approximately 60,000 pounds per day.

A San Antonio warehouse reports that cooler occupancy was 20 per cent lower than average for the first nine months of 1952. Early in December a larger Texas pecan crop started coming in and filled the space to approximately 80 per cent occupancy. Occupancy of freezer space was about average for the year and as usual, the activity of packing houses from October to January brought a peak occupancy to freezers. Because of the peak occupancy in freezers during October, November and December brought about by the packers, this company has constructed a new single-story freezer warehouse of approximately 300,000 cu. ft. This will allow them to convert some of the present freezer rooms to coolers to take care of the peak pecan movement November to March.

A Tacoma warehouse reports occupancy of about five per cent over 1951 and they expect 1953 to equal 1952. No new space was added, but 16,000 cubic feet was converted from cooler to freezer space.

A Milwaukee warehouse reports that their business in 1952 was quite similar to 1951, although both cooler and freezer occupancy declined somewhat more during the summer months this year. They have converted an approximate 100,000 cubic feet of coolers to freezers, following the continued decline in demand for cooler space.

Principal Commodities

FROZEN foods heads the list of principal commodities stored, followed by turkeys, citrus concentrates, pears and peaches, rice, tobacco, meat, butter, eggs, cheese, evaporated milk, pecans. Again this year, frozen foods continued to move into and out of storage at an increased rate.

Two California warehouses report that the principal commodity stored was frozen foods. Other items listed are turkeys, citrus concentrate, military storage, pears and peaches for canning. Frozen foods and turkeys increased considerably over 1951 and there was some increase in military storage.

Principal commodities for a Modesto, Calif., warehouse were frozen fruits and vegetables. The volume of poultry products was up slightly.

A Boise, Idaho, warehouse reports that principal commodities were frozen foods and farm products, about 10 percent above 1951.

A New Orleans warehouse reports that packing house meat products increased while seafood, especially shrimp, decreased, but this was due to Gulf shrimp conditions of a local nature.

In addition to the usual cold storage commodities, a New Orleans warehouse handled considerable molasses, rice and tobacco and the volume of these exceeded that of 1951.

Principal commodities for a Portland, Me., warehouse were frozen foods and meat products. Frozen foods dropped off due to owners keeping a more close check on inventory. Meat products increased due to government controls and speculation.

A Duluth, Minn., warehouse reports some more meat than in 1951 but less butter and eggs, and apples about the same.

Commodities stored by a Bridgeton, N. J., warehouse are practically all frozen fruits and vegetables.

An Elmira, N. Y., warehouse stores a general line of perishable commodities, specializing in the storage of cream, frozen foods, packing house products, poultry and fresh fruits and vegetables.

From Fargo, N. D., commodities ran about the same as the previous year except that there were more turkeys and other poultry.

In Dayton, Ohio, the principal commodities stored were frozen fruits and vegetables, meats, cream, poultry and fish, all of which increased in volume over 1951.

A Philadelphia warehouse reports the bulk of their business was eggs, fish, frozen fruits, vegetables and juices, meats and poultry. The volume generally increased and accounted for the overall increase.

A Nashville, Tenn., warehouse stores mostly milk products (cheese, evaporated milk, butter), frozen eggs, frozen fruits and vegetables and frozen meats. Cheese was down, evaporated milk up, others about the same.

A Houston warehouse stores all perishables except onions, both freezer and cooler space. Percentagewise their cooler storage was approximately 25 per cent higher than 1951. Freezer occupancy was about the same as 1951.

A San Antonio warehouse reports that the principal commodities stored

are pecans in the shell, frozen meats and frozen foods.

Principal commodities of a Tacoma, Wash., warehouse are the freezing and storage of strawberries, red raspberries and blackberries grown locally. The volume exceeded 1951 by ten per cent.

Transportation

THIS new subject of transportation in the survey this year develops some interesting information on the comparative amounts of commodities shipped by rail and by truck. It depends partly on the location and partly on the class of commodities handled. A simplified conclusion is that it's about the same for both, some houses having more rail and others more truck shipments. For short hauls of small orders, trucks can handle the job in less time.

A San Francisco warehouse estimates that approximately 60 per cent of the tonnage is transported by rail and 40 per cent by truck.

Exactly the reverse figures are reported from another California warehouse, 40 per cent by truck and 60 per cent by rail, including both receipts and deliveries.

At Modesto, Calif., the proportion is 75 percent by truck and 25 percent by rail.

Boise, Idaho, reports equal amounts by rail and truck.

In New Orleans about 40 per cent are transported by truck.

Another New Orleans warehouse reports one quarter by rail; three quarters by truck. There has been a very noticeable trend from rail to over-the-road truck deliveries in an out. It still continues.

In Portland, Me., 75 percent arrives by rail and 100 percent leaves by truck.

A Detroit warehouse reports that two-thirds of their tonnage was received by rail and one-third by truck.

Duluth, Minn., reports about 60 per cent by rail and 40 per cent by truck.

A Minneapolis warehouse reports that more goods are now moving by truck. There is a steady increase in comparison with years ago. Truck loadings or unloadings call for immediate attention and speed. It increases costs since in most instances they call for handling by warehouse employees. Where they furnish men to aid in truck loading, they try to make a charge to cover but are not always successful in collecting.

Transportation to and from a Bridgeton, N. J., warehouse was mainly by truck, except in the case of shipments from the Coast which were entirely by rail. One reason for the larger proportion of truck shipments was due to the fact that the amounts ordered out did not come to a minimum carload and coupled with this was the advantage of shorter delivery by truck.

About 75 percent of the commodities placed in storage in Elmira, N. Y., are received by truck and are taken out by truck. The balance is handled by rail.

A Fargo, N. D., warehouse reports that 95 per cent of the products handled through their plant move by rail.

A Dayton, Ohio, warehouse reports that about 65 per cent of the commodities stored come by truck.

Philadelphia reports that transportation varies every year. So far, in 1952, they had received about 45 per cent of the total volume by rail and the other 55 per cent by truck.

In Nashville, Tenn., it is about 60 per cent by truck and 40 per cent by rail.

From Houston, Texas, it is evenly divided, 50 per cent by each.

A San Antonio warehouse reports that the greater portion of the commodities received are transported to the warehouse by truck.

Tacoma, Wash., reports that they ship about 65 per cent by rail and 35 per cent by truck.

For a Milwaukee warehouse rail volume continues to decline as truck volume increases. About 80 percent of their volume today moves by trucks although this trend may stop or even reverse itself if the costs of truck operation continue to increase. Further, if the rails improve their low temperature cars and continue to put more of them in service, it should have a tendency to at least slow down the above trend.

Source of Products

THE SOURCE of products, another new subject in this year's survey, discloses information on the volume coming direct from producing areas, and in-transit storage, and length of time in-transit goods are held. This again depends on the location, whether near producing areas, and whether the city is a natural transit point. Most of the houses reporting are near producing areas and get most of their storage business from that source.

A San Francisco warehouse reports that 35 to 40 per cent of their volume comes direct from producing areas and only a small volume of in-transit storage.

A San Jose warehouse reports that 95 per cent of their volume comes from local producing areas.

Refrigerated Warehousing

A Modesto, Calif., warehouse reports that 95 percent of their commodities comes from areas of production.

A Boise, Idaho warehouse reports 25 percent in-transit storage for two to six months.

A New Orleans warehouse reports very little storage-in-transit business, due to the fact that New Orleans is almost at the end of the line. Most of the business handled there is for distribution or for export through the port of New Orleans.

Another New Orleans warehouse reports one third from producing areas and the balance in-transit. They are primarily a terminal and distribution warehouse. In-transit goods average about 30 days.

Detroit also reports most of their storage products from producing areas and they handle very little storage-in-transit merchandise.

A Duluth, Minn., warehouse reports about 40 per cent of the commodities handled are storage-in-transit.

A Minneapolis warehouse reports that their accounts come largely from producing areas and consist of commodities generally distributed in that trade territory by food purveyors. They handle only a few accounts that have items classified as storage-in-transit goods and this business is only a small part of the gross income. Government business is in the same category. Yet they are happy to have what they do have of both. They get along fine in this type of operation as it is largely car lot business and in general can be handled leisurely or by arrangements of a planned nature thus aiding in the man power problems.

Practically all of the products of a Bridgeton, N. J., warehouse come from producing areas.

An Elmira, N. Y., warehouse reports that more and more the volume of goods for storage comes directly from producing areas in the vicinity of Elmira. Storage-in-transit is no longer the factor it used to be although 20-25 percent of the business is still in-transit storage and these goods are held for varying lengths of time.

A Fargo, N. D., warehouse reports that the source of their storage products is in that immediate vicinity and at times, on some commodities, storage-in-transit is used but usually the goods are removed in less than a year.

Dayton, Ohio, reports that Dayton is not a good point for in-transit storage and they get practically none.

Nearly all the business of a Philadelphia warehouse comes from pro-

ducing areas and they have very little in-transit storage.

A Nashville, Tenn., warehouse reports that about 75 per cent of their commodities come from producing area and 25 per cent in-transit storage. In-transit goods average five to six months holding.

A Houston warehouse reports that approximately 80 per cent comes from producing areas. Approximately 20 per cent of the in-transit goods are held from four to six months.

A San Antonio warehouse reports that San Antonio is not considered a transit point, hence they have very little tonnage that arrives to be stored in-transit.

Tacoma, Wash., reports that about 60 per cent of their volume comes direct from local producing areas, 20 per cent interstate and 20 per cent local merchants. Storage in-transit movement is very small.

Butter, one of the principal items of a Milwaukee warehouse, continues to decline sharply, largely due they believe, to the increase use of oleo.

Frozen Foods

FROZEN foods continues as a major and growing cold storage commodity. Proof of this is well shown by the fact that practically all houses reporting an increase over the previous year and a very favorable outlook as regards 1953.

A San Francisco warehouse reports that frozen food tonnage showed an appreciable increase over 1951 and indications are that the upward trend will continue during 1953.

Another California warehouse reports more frozen foods received during 1952 than in 1951 and they expect still more in 1953.

A Modesto, Calif., warehouse reports an increase of frozen foods in 1952 and they expect a still further increase in 1953.

Boise, Idaho, reports an increase in frozen foods in 1952 and they expect another increase in 1953.

From New Orleans comes a report of an increased volume of about 20 per cent over 1951 and an expected increase in 1953.

Another New Orleans warehouse reports that they handle very little frozen foods although they expect it to increase slightly in 1953.

There was an increase in frozen food storage in Portland, Me., and they expect this volume to be about the same for 1953.

A Detroit warehouse reports their volume of frozen foods was 2 million pounds more than for the same period of 1951.

A Duluth warehouse had no increase during 1952 and does not expect any improvement for 1953.

An Elmira, N. Y., warehouse receives an appreciable volume of frozen foods and they expect that as the frozen food industry expands, the demand for their services will expand with it.

A Fargo warehouse reports frozen foods as a fast growing item in their storage.

Philadelphia reports that they received more frozen foods in 1952 than in 1951 and look for a further increase in 1953.

Volume of frozen foods were up in 1952 for a Nashville, Tenn., warehouse and they expect continued income in 1953.

A Houston warehouse reports that percentagewise, frozen foods increased approximately 15 per cent over 1951. They expect approximately 15 to 20 per cent increase in 1953 over 1952.

A San Antonio warehouse reports that they did not receive a large volume of frozen foods during 1952, but expect an increase in 1953, particularly because they have much better facilities now for handling frozen foods.

In Tacoma, Wash., local distribution of frozen food increased considerably in 1952 and will undoubtedly continue in 1953.

Frozen foods volume continues to grow for a Milwaukee warehouse. Their tonnage this year was a bit higher than last year.

New Storage Commodities

IN THESE days of increased occupancy, interest in new storage commodities seems to have been relegated to a minor position, with more emphasis on the more immediate problems of taking care of current calls for service. A considerable number of those reporting in this survey say that they haven't handled any new commodities, nor have they provided any additional service. However there is still interest in the subject. One operator stores rose bushes and other plants, and another frozen bread. Storage batteries are mentioned by one operator and another lists synthetic resins, candies and canned goods.

A San Francisco warehouse reports that one of the most interesting developments during the past year has been the storage of lead acid and dry cell batteries. Most of their battery storage has consisted of dry cell batteries for the military but they believe they can look forward to developing a fair volume of lead acid battery storage in the future.

A New Orleans warehouse reports that they are storing rose bushes, rooted and wrapped in burlap at the bottoms, and some similar plants in their coolers and find they hold up nicely.

A Portland, Me., warehouse tried freezing bread and holding it in storage to take the extra load which was placed on the baking industry during the summer holidays. This was a success but they had to discontinue it because of lack of space.

A Houston, Texas, warehouse reports synthetic resins in cooler storage and additional air conditioned storage of candies and some canned goods.

From Dayton, Ohio, comes the suggestion that the future may bring such items as frozen milk, frozen cuts of meats, etc.

Costs and Income

COSTS of doing business were up again from last year for most houses, although there were a few exceptions in which they were in line with increased income. Materials and labor continued upward, and demand for increased service in some instances added their toll. Increased volume in many cases, however, produced sufficient revenue to take up part of the slack. Some criticism is expressed again that revenue is held static under OPS regulations while costs of labor and other items continue to increase.

A San Francisco warehouse reports that costs increased considerably during 1952 and in general were not in line with increased business.

Another California warehouse reports that costs were not quite in line with income compared to last year and previous years.

For a Modesto, Calif., warehouse gross costs were up but net costs were down.

Costs were higher for a Boise, Idaho, warehouse.

A New Orleans warehouse reports that costs were as they have been for several years, too far ahead of income. But they did better in 1952 in profits and expect an even better picture in 1953.

Due to increased volume last year and in previous years, a New Orleans warehouse reports costs in line with income.

A Portland, Me., warehouse reports that costs were in line with income.

A Detroit warehouse reports that costs for 1952 were higher in comparison to 1951 due to increased costs of materials and labor.

A Duluth, Minn., warehouse reports that mounting costs of labor and other items have reduced income to the vanishing point.

A Minneapolis warehouse says that in the endeavor to meet the needs of the industry they face higher costs and bigger expenditures and the money must come from their own operations. Truck loadings or unloading tend to increase costs since they call for immediate attention by warehouse labor. Wages and costs have steadily increased, making it impossible to show profit margins comparable with past years despite about as high an occupancy as they could handle.

A Bridgeton, N. J., warehouse reports that they definitely found this year that costs were greater compared to previous years, and were not in line with income.

Costs of doing business in Elmira, N. Y., were about the same as last year and were not out of line with previous years.

A Fargo, N. D., warehouse reports that their costs are not in line with their income when compared with previous years. There are two reasons for this. One is the government interference by encouraging increased costs and prohibiting increased charges for services. The other reason is that some products are stored of such nature that the rate should be higher.

From Dayton, Ohio, comes a report that costs were in line with income, but only because of volume. A drop in volume would mean a sharp revision of costs and could be much more difficult than in former years when occasion made that necessary.

A Philadelphia warehouse reports that their income has increased materially, and due to the increased volume and the use of mechanical handling equipment, costs are not out of line with other years.

From Nashville, Tenn., comes the report that costs were not up noticeably.

A Houston warehouse reports that costs were approximately the same as previous year. In fact, eliminating the increased tax, their costs would have been somewhat lower.

The cost of doing business for a San Antonio warehouse again increased about 8 per cent in 1952 over 1951, but with mechanized equipment they have installed, a savings in labor costs should develop in 1953.

In Tacoma, Wash., operating cost was up and net profit down. If the volume of tonnage handling falls off and tariff rates are not increased they could be hurt.

A Milwaukee warehouse reports that costs continue to mount, whereas revenue remains static due to OPS regulations. They hope that government regulations will soon disappear and that they can again resume normal business operations.

Industry Problems

ON BASIS of these reports, no new problems appear to have emerged during the year. But many old ones continued to add to the difficulties of management. Among these were insufficient income, traffic congestion, the need of taking better care of commodities in storage, increasing wages and taxes, and labor turnover.

One of the most serious problems encountered during 1952, according to a San Francisco warehouse was the tendency for more and more frozen food to be held at the point of production until sold rather than being shipped to distribution areas or in-transit storage. This trend has brought about some extremely crowded conditions in the heavy production areas.

Another California warehouse reports that their most outstanding problem is creation of more income to offset increased costs.

Handling new fiber poultry cases was cited as the most outstanding problem of a Modesto, Calif., warehouse.

A New Orleans warehouse reports that their most outstanding problem is traffic congestion and space for trucks loading and unloading at the plant.

Indifferent and careless help was the most outstanding problem of another New Orleans warehouse.

Careless marking of goods which creates difficulties when moving small lots out of storage was one of the biggest problems of a Portland, Me., warehouse.

A Duluth, Minn., warehouse lists as their No. 1 problem how to get rates readjusted upward without pricing themselves out of business.

A Minneapolis warehouse says the industry as a whole is entitled to a higher percentage of gross income as net profits if they would keep their facilities in proper condition to meet the challenge of the years ahead as they are presented to the industry. With the Research Foundation functioning ably under the fine direction of Dr. H. C. Diehl, they are going to have more and more of the necessities of life placed in refrigerated warehousing and they are daily confronted with the need of taking better care of all foods than they ever have done before.

The most perplexing problems for an Elmira, N. Y., warehouse are those of manpower and taxes. The manpower problem can and will be solved, but the tax problem presents some real difficulties. But they do not think there will be any appreciably lower taxes in the foreseeable future.

Refrigerated Warehousing

A Dayton, Ohio, warehouse says they have no problems which they cannot overcome. Customers who ask for services that do not comply with the system are most generally considerate when explanation has been made. They have taken no government contracts except when they store the same as any other customer.

According to a Philadelphia warehouse, increased wages and taxes are always a problem. Others at the moment are obsolescence of buildings and equipment and the rate at which they're depreciated; whether to convert additional cooler space to freezer; and whether to add more space.

A Nashville, Tenn., warehouse says some labor turnover has created a problem, but they consider their increasing contribution to cost of national, state and local governments a real problem.

A Houston warehouse lists as its problems, employee turnover, disinterest on the part of warehouse laborers, and an increasing pilfering condition.

The greatest problem for a San Antonio warehouse is obtaining reliable checkers and, because of the large labor turnover, they experience trouble in organization of the work.

For a Tacoma warehouse, the greatest problem of 1952 was increasing operating costs.

Outside of the cost price squeeze, the next major headache reported by a Milwaukee warehouse is personnel, both male and female. It has now become nearly impossible, they say, to locate and hire competent warehouse and office help.

Possibilities of Better Business

WITH space occupancy again on a satisfactory basis during 1952, no deep thinking as to plans for building better business seems to have been given much consideration. And 1953 gives good promise of continuing this satisfactory condition. However, there are a number of valuable suggestions, including continuing efforts to do a good job of refrigerated warehousing by furnishing the services required. Other ideas include use of materials handling equipment, using the trend toward frozen foods, improved service, cooperation with customer industries, more participation in association activities and using the know how they already have.

According to a San Francisco warehouse, wider dissemination of information pertaining to new types of business developed, experimental

work, new construction, materials handling, all tend to create better business conditions. A great deal of public relations work remains to be done in telling the man on the street and the housewife about the industry because, generally speaking, they know very little about it.

A New Orleans warehouse offers the suggestion of providing better warehousing services and facilities.

A Portland, Me., warehouse says he believes they all should be thinking of palletization as more and more goods are being shipped this way and truckers favor this way of unloading.

It goes without saying reports a Bridgeton, N. J., warehouse that refrigerated warehousemen should establish close and cordial relations with their storers. One of the ways of accomplishing this is to comply with a storer's request for delivery receipts, warehouse receipts, and any other reasonable paper work within a reasonable time. They should attend and take part in the activities of their national, area and state associations, whereby they are in touch with the answers to problems which are germane to all of them. They should support The Refrigeration Research Foundation which is continually working for the benefit of the refrigerated warehouse industry, and which, through practical research, is obtaining the answer to some of its most pressing problems.

An Elmira, N. Y., warehouse says the refrigerated warehousing industry can go on to bigger and better things if its members will operate their plants and run their businesses "at least half as well as they know how."

As to creating more business or more volume, a Fargo, N. D., warehouse says they think the general trend is now very definitely in favor of cold storage and with the deep freezers in private homes and so many edibles in frozen states, the public seemingly is going overboard in using frozen foods.

According to a Dayton, Ohio, warehouse, better business and bigger volume depends on the growth of frozen food demands which is on the ascendancy, and on new items developed for storage. Each warehouseman will have to arrange his facilities when the time comes.

A Philadelphia warehouseman admits that he doesn't know how to create better business or bigger volume but he does suggest uniform terms and conditions and standard forms for the entire industry.

A Nashville, Tenn., warehouse suggests improved services and cooperation with customer industries such as space reporting like the service instituted in the southeastern area.

From Houston, Texas, comes these suggestions for better business; better public relations and education of the general public as to the services and benefits of the refrigerated storage; and better service to customers and continued good storage conditions that have generally prevailed in the past.

The Outlook for 1953

ALMOST without exception the warehousemen reporting in this survey expect business for 1953 to be as favorable as 1952, or even better. These opinions are based on expected continued business prosperity and only one raises the question of a possible business reaction which might have an unfavorable effect.

According to a San Francisco warehouse, with the tremendous increase in frozen food tonnage and the influx of population into California, they look for a continued upward trend in business for 1953.

Another California warehouse says the outlook for 1953 is good.

A Boise, Idaho, warehouse expects that 1953 business in that territory will be fully as good as it was during 1952. There is not at the present time any great prospect of a collapse in prices for agricultural products and that is the principal business around there. There is a steady increase in the demand for freezer space. There is also a fairly good demand for storage space without refrigeration.

A New Orleans warehouse reports that the outlook for business in that particular area is very good for the year 1953.

For another New Orleans warehouse the outlook for 1953 is very bright. They expect their best year since the war boom of 1945-46.

A Portland, Me., warehouse looks for more demands for storage in 1953. They find more inquiries for rates than in the past, also questions as to palletization.

A Duluth, Minn., warehouse expects about normal business for 1953, with nothing unusual in sight.

A Minneapolis warehouse doesn't look for much change in occupancy during 1953.

The year 1953 should be one of "Cautious progress" according to an Elmira, N. Y., warehouse.

Unless there is a reaction or worse; the outlook for 1953 is exceptionally good, according to a Philadelphia warehouse.

A Nashville, Tenn., warehouse reports that business still looks good all over the State and they expect 1953 occupancy to be as good as it was in 1952.

From Houston, Texas, the report is that in that area they can expect continued good business during 1953.

A Tacoma warehouse reports that in that area the prospects for 1953 are good.

A Milwaukee warehouse hesitates to forecast what the coming year may bring. While, from the optimistic side, it is anticipated that frozen foods volume will continue to grow, nevertheless, with markets again becoming adjusted to a "supply and demand" basis, some erratic conditions may develop which may affect the overall tonnage.

Miscellaneous Comment

A NUMBER of comments, not related to the above sub-titles, but having a bearing on the complete picture, included the following:

A Minneapolis warehouse reports that pool car distribution in that area seems to be on the increase. Food chains and the larger wholesalers are taking a larger quantity of shipments as distribution and holding in their own premises which are being expanded in a great many instances. This is especially true of items that move rapidly through consumer channels and which may be stored in dry storage at other than certain months of the year. Brokers, too, are being very watchful of storage costs applying to their principals or to their customers and in so doing are tending to cut corners wherever possible.

An Eastern warehouse suggests that each warehouseman should stand on his own feet and allow his competitor the full range of his warehouse to compare his own shortcomings or allow his competitor to criticise his shortcomings with the full sense of just criticism.

Warehousemen List Problems

IN ADDITION to the problems listed in the survey of ICE AND REFRIGERATION, the following are the results of a spot check survey made recently by the National Association of Refrigerated Warehouses, asking warehousemen to list the three problems that seem to give them the most trouble.

In order of frequency named they were: (1) increased costs of operation, (2) high labor turnover and difficulty in finding good workers, (3) government controls and interference in business, (4) inability to adjust rates to meet increased costs, (5) taxes, (6) increased office detail, (7) small packages and small lots, (8) high cost of expansion and modernization, (9) mechanization of multi-story plants.

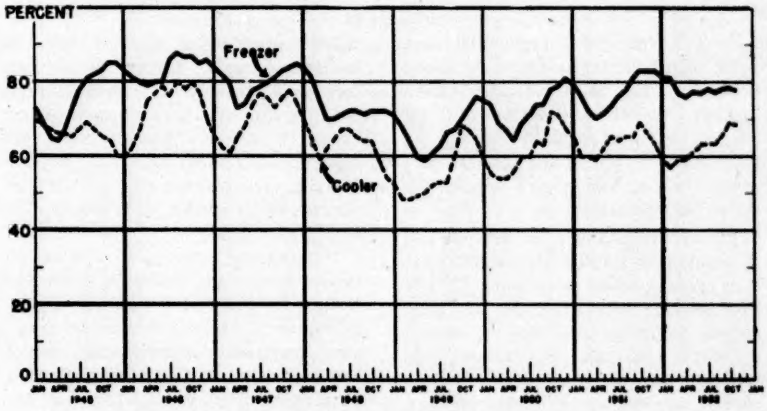
November 30 Cold Storage Holdings

ACCORDING to reports received by the Department of Agriculture for the month ended November 30, utilization of cooler space in public warehouses declined one point during the month to 68 per cent whereas occupancy in freezer space remained unchanged at 78 per cent. Although the decline in cooler occupancy was less than average for this time of year, utilization at the end of the month was equal to the 1947-51 average occupancy for November. Freezer occupancy also was about average for November 30 with 78 per cent of the freezer space utilized on November 30. However, in several areas, Middle Atlantic, East North Central, East South Central, and Pacific, warehousemen reported freezer space to be better than 80 per cent filled while in Nashville, Norfolk, New Orleans, Los Angeles, and San Francisco, both cooler and freezer space were above this level.

Net withdrawals of storage commodities from cooler space during November brought total stocks down to 2.6 billion pounds. This reduction —about 4 per cent—was 15 million pounds greater than withdrawals last year and is in contrast to an increase of 16 million pounds during the 5-year period ended 1951. Accounting for this decrease were reductions in stocks of fresh fruits, cheese, shell eggs and dried eggs. There was, however, net increases in stocks of meats but these accumulations could not counter the commodities moving from storage. Freezer held commodities on the other hand reflected an increase during November. Total stocks were up to 2.3 billion pounds which compares with 2.2 billion in store last year and only 1.8 billion on hand November 30 during the 5-year period ended 1951. The seasonal gain—11 million pounds — was one of the smallest on record, being about one-sixth as great as last year's increase and about one-fifth as great as average.

The number of apples reported in storage on November 30 totaled about 25 million bushels. Last year, stocks totaled 28 million while average holdings for this time of year—1947-51 average — was 32 million bushels. Pear stocks, totaling a little more than 2 million bushels, were about equal to the November 30 average and the stocks last year. Holdings of peanuts and tree nuts in shell and shelled were greater than average for this time of year but stocks were below average for onions, fresh vegetables, dried and evaporated fruits.

Although the net disappearance of frozen fruits during November—16 million pounds—was about average for the month, it was about one-third less than the net-withdrawals last year. Total stocks were down to 310 million pounds as compared with 354 million a year ago. Stocks of cherries reflected a 5 million pound net reduction during November while frozen strawberry stocks were reduced 10 million pounds to 114 million pounds. All frozen fruit items except blueberries, peaches and strawberries were below their respective 5-year



Occupancy of Refrigerated Warehouses, 1945-1952

TABLE 1—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

	Nov. 30 1952	Oct. 31 1952	Nov. 30 1951	Five-year Average
Meat and meat products, lbs.	681,802	566,828	687,974	564,530
Lard and rendered pork fat, lbs.	80,439	78,992	39,229	57,445
Frozen poultry, lbs.	292,694	279,191	309,943	267,134
Creamery butter, lbs.	80,620	102,177	59,349	91,178
American cheese, lbs.	214,356	225,317	204,683	178,865
Other cheese, lbs.	20,979	19,866	18,524	19,281
Shell eggs, cases	388	1,000	230	362
Frozen eggs, lbs.	73,004	95,333	95,143	109,450
Apples, bu.	25,179	26,892	28,000	31,813
Frozen fruit, lbs.	310,023	326,459	354,078	332,639
Frozen vegetables, lbs.	564,822	576,522	522,076	398,513
Frozen fish, lbs.	209,283	200,944	179,136	160,671

TABLE 2—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

	Net piling space (000 cu. ft.)		Nov. 30, 1952 (%)		Oct. 31, 1952 (%)		Nov. 30, 1951 (%)		5-year Average (%)	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	2,912	6,722	42	75	45	77	52	51	62	81
Middle Atlantic	28,154	32,828	70	85	72	86	68	87	69	82
East North Central	28,933	29,213	67	82	70	83	63	83	68	78
West North Central	10,780	16,575	60	67	64	62	59	78	71	76
South Atlantic	8,674	9,450	67	69	69	67	72	88	63	74
East South Central	2,510	3,575	83	88	79	86	84	89	75	84
West South Central	7,157	7,558	65	59	64	59	57	65	62	66
Mountain	1,253	2,956	67	78	73	81	61	92	63	79
Pacific	15,062	24,736	73	82	73	84	74	80	72	78
United States	105,435	133,613	68	78	69	78	66	83	68	78

TABLE 3—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

	Private and Semi-Private Warehouses						Meat Packing Establishments					
	Net Piling Space (000 cu. ft.)		Space Occupied—per cent Nov. 30, 1952		Nov. 30, 1951		Net Piling Space (000 cu. ft.)		Space Occupied—per cent Nov. 30, 1952		Nov. 30, 1951	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	—	—	—	—	56	81	—	—	—	—	—	—
Middle Atlantic	1,305	1,160	56	66	83	89	819	169	93	73	59	92
East North Central	3,372	5,353	77	49	86	62	4,751	756	81	69	85	80
West North Central	364	2,201	77	81	90	63	4,415	2,012	79	65	87	88
South Atlantic	469	2,904	54	63	84	53	694	124	81	100	82	100
East South Central	—	—	—	—	—	—	—	—	—	—	100	86
West South Central	—	—	—	—	92	100	80	5	100	100	100	100
Mountain	464	162	80	100	92	68	186	107	91	100	97	100
Pacific	1,317	2,120	72	71	29	27	418	74	100	100	100	100
United States	7,291	13,900	71	62	62	67	11,363	3,247	82	70	86	82

NOTE: Blank spaces indicate that insufficient returns were received.

average levels for November 30 and, as a result, total stocks were about 5 per cent less than average. Frozen orange concentrate holdings fell off to less than 12 million gallons by November 30 but holdings were still greater than last year's stocks by some 538,000 gallons.

Frozen vegetables in storage on November 30 totaled almost 565 million pounds which were some 12 million pounds less than the all time record holdings reported a month earlier. Although November net-withdrawals were average for the month, the change was only about a third as great as a year ago when net-withdrawals amounted to 32 million pounds. Holdings of green peas were down 18 million pounds to 162 million while sweet corn and snap beans each reflected a 7 million pound reduction to 51 and 59 million pounds respectively.

Holdings of cream on November 30 were about one-fifth greater than average stocks and those last year. Total holdings of approximately 32 million pounds reflected a seasonal decrease of only 6 million pounds as compared with 8 million last year and 9 million during November for the 5-year period ended 1951.

National holdings of butter were down to 81 million pounds by the end of November as withdrawals during the month totaled 22 million pounds. This reduction was below average and the change last year by 7 million and 13 million pounds respectively.

Stores of shell eggs were down to 388,000 cases. Frozen eggs totaled 73 million pounds as stocks fell off 22 million pounds from the previous month.

Cheese stocks reflected a below average change during the month (10 million vs. 27 million) and by November 30 totaled 246 million pounds. Of this amount American cheddar totaled 214 million pounds which was a decrease from the previous month of almost 11 million pounds.

Stores of frozen poultry totaled 293 million pounds—a gain of only 14 million pounds during November. Last year stocks increased 50 million pounds. Yet, total poultry stocks were about 10 per cent greater than average on November 30. All poultry items except turkeys showed little or no change in stocks from October 31 to November 30.

Holdings of turkeys, now at an all time record high, increased from 142 million to almost 157 million—a gain in excess of 14 million pounds. However, included in these storage stocks are approximately 19 million pounds of turkeys held by vendors for delivery to the Department of Agriculture under the turkey purchase program and in addition there are approximately 3 million pounds of turkeys which are USDA owned under this program and are also included in the report on government-owned stocks given in table 13, page 14.

Storage gains for beef during November were only half as great as last year when 57 million pounds moved into store. This year, total holdings of 227 million pounds were a gain of only 29 million pounds over the previous month but stocks were about one-fourth greater than in 1951 and about four-fifths greater than average. Holdings of frozen beef—217 million pounds—were the largest for any November 30 on record since 1919.

Holdings of pork were up to 312 million pounds as net accumulations during November totaled 77 million pounds. Of this amount frozen pork totaled 149 million pounds. Last year, stocks totaled 186 million pounds while average November 30 stocks were 127 million pounds.

A slight gain in lard and rendered pork fat stocks—1 million pounds—brought total holdings to 80 million pounds which were twice the November 30, 1951 stocks and 40 per cent greater than average.

November 30 stores of frozen fishery products increased about 8 million pounds to 209 million while holdings of cured fish decreased from 26 million to 24 million during November. Total stocks of 234 million pounds compares with 206 million last year and 183 million during the 5-year period ended 1951.

Storage Outlook

The pattern indicated by the change in cooler occupancy from October 31 to November 30 should continue to prevail during December. Now on the downward cycle, cooler occupancy may fall off by as much as 4 points by December 30 if there are significant net withdrawals of fresh fruits, cheese and other cooler stored commodities which as yet have been below average in their rate of movement from store. Freezer occupancy may not be much higher than 78 per cent next month even though historical performance indicates the likelihood of an increase.

Cold Storage Holdings In Canada December 1

STOCKS of fruit, frozen and in preservatives in Canada, on December 1, 1952 amounted to 28,626,000 pounds as compared with 30,056,000 on November 1 and 38,322,000 on the corresponding date last year. Holdings of vegetables, frozen and in brine totalled 17,337,000 pounds, against 18,435,000 on November 1, and 17,011,000 on December 1, 1951.

Holdings of apples in cold and common storage, including the stocks held by commercial growers, on December 1 amounted to 4,941,000 bushels as compared with 5,282,000 on the corresponding date last year. Stocks of pears totalled 51,000 bushels, compared with 88,000. Stocks of fresh vegetables in cold and common storage on December 1 were as follows, total for same date year ago in brackets: potatoes 17,719,000 (13,941,000) bushels; onions 820,000 (570,000); carrots 893,000 (666,000); cabbage 311,000 (309,000); and celery 128,000 crates (184,000).

Annual Report Cold Storage Holdings

THE utilization of public cooler and freezer storage space in refrigerated warehouses during 1952, 1951 and 1950, also the 1947-1951 five-year average is shown in the followinig tables, compiled from monthly reports issued by the Production and Marketing Administration of the United States Department of Agriculture. On the whole, there was increased occupancy for most commodities, although creamery butter, frozen fruits and apples showed a definite decrease over both last year and the five-year average. On the other hand, frozen meats, frozen poultry, shell eggs, frozen vegetables, and frozen fish showed an increase over last year and the five-year average. American cheese and frozen eggs were up and down, averaging about the same as last year.

TABLE 1. FROZEN BEEF, PORK, LAMB AND MUTTON (000 POUNDS)

	1952	1951	1950	5-yr. average
Dec. 31	947,203	762,887	769,708	733,721
Jan. 31	1,081,122	959,886	849,825	885,009
Feb. 29	1,195,518	917,774	815,578	880,735
Mar. 31	1,236,834	905,946	778,415	852,113
Apr. 30	1,230,272	892,158	749,314	799,867
May 31	1,083,901	839,262	673,868	724,807
June 30	1,026,003	778,413	633,160	697,877
July 31	856,167	700,943	542,713	605,155
Aug. 31	693,449	605,151	466,263	504,804
Sept. 30	579,602	521,655	410,280	413,934
Oct. 31	550,965	499,293	404,740	409,262
Nov. 30	681,802	697,180	545,098	564,530

Frozen meat showed a substantial increase for each month over last year except the month of November and the five year average.

TABLE 2. FROZEN POULTRY (000 POUNDS)

	1952	1951	1950	5-yr. average
Dec. 31	302,144	281,601	281,972	273,873
Jan. 31	297,754	284,623	295,736	267,843
Feb. 29	269,334	242,023	260,523	236,048
Mar. 31	233,482	192,913	212,058	192,388
Apr. 30	195,100	147,203	167,000	153,017
May 31	184,238	125,359	136,548	129,076
June 30	174,461	112,369	122,328	116,039
July 31	156,438	106,692	103,367	109,427
Aug. 31	141,631	121,493	105,179	116,279
Sept. 30	182,690	166,242	140,352	150,599
Oct. 31	277,200	258,810	217,999	224,385
Nov. 30	292,694	308,366	269,640	267,134

Frozen poultry also showed an increase for each month of the year except November over last year and the five-year average.

TABLE 3. CREAMERY BUTTER (000 POUNDS)

	1952	1951	1950	5-yr. average
Dec. 31	26,857	105,364	105,192	60,869
Jan. 31	13,640	75,329	103,657	45,869
Feb. 29	7,663	52,507	92,886	34,284
Mar. 31	6,157	33,378	93,489	28,897
Apr. 30	10,182	32,207	109,020	34,042
May 31	30,500	42,590	136,867	53,319
June 30	69,739	72,598	185,167	93,033
July 31	98,580	104,405	230,063	127,529
Aug. 31	112,173	116,790	239,398	139,206
Sept. 30	110,571	113,501	234,111	134,566
Oct. 31	101,574	94,811	208,228	120,639
Nov. 30	80,620	59,990	159,873	91,178

Creamery butter showed a decrease for each month except the months of October and November over last year and a decrease every month over the five-year average.

TABLE 4. AMERICAN CHEESE (000 POUNDS)

	1952	1951	1950	5-yr. average
Dec. 31	193,323	188,519	187,157	140,884
Jan. 31	162,976	155,117	159,906	125,299
Feb. 29	141,942	137,397	149,004	113,168
Mar. 31	132,882	130,655	141,946	108,087
Apr. 30	139,436	144,441	153,135	117,628
May 31	163,460	169,553	186,062	137,165
June 30	194,094	204,009	229,785	108,939
July 31	210,263	227,199	256,395	193,282
Aug. 31	224,934	233,788	287,977	211,974
Sept. 30	228,741	239,500	292,421	213,456
Oct. 31	221,046	227,561	276,930	202,264
Nov. 30	214,356	204,842	233,733	178,865

American cheese increased the first four months and decreased the balance of the year except November over last year, but increased each month except November over the five-year average.

TABLE 5. SHELL EGGS (000 CASES)

	1952	1951	1950	5-yr. average
Dec. 31	149	26	34	253
Jan. 31	244	76	380	233
Feb. 29	928	159	735	327
Mar. 31	1,603	309	1,296	762
Apr. 30	2,185	973	2,147	1,781
May 31	3,158	2,083	3,412	3,159
June 30	3,333	2,427	3,667	3,651
July 31	2,725	2,270	3,163	3,432
Aug. 31	2,160	1,615	2,568	2,805
Sept. 30	1,692	958	1,558	1,884
Oct. 31	992	513	502	1,007
Nov. 30	388	232	62	362

Shell eggs showed an increase each month over last year, but as compared to the five-year average were up and down, averaging about the same.

TABLE 6. FROZEN EGGS (000 POUNDS)

	1952	1951	1950	5-yr. average
Dec. 31	67,833	48,655	47,310	89,354
Jan. 31	53,422	31,157	55,052	72,195
Feb. 29	59,935	32,712	73,159	71,744
Mar. 31	84,444	62,298	116,546	99,627
Apr. 30	112,125	109,253	155,108	144,250
May 31	145,489	162,659	179,732	186,914
June 30	165,865	189,980	188,476	209,819
July 31	163,833	190,818	174,761	206,582
Aug. 31	144,801	176,273	155,369	189,274
Sept. 30	121,754	151,293	133,002	164,701
Oct. 31	95,032	119,885	104,378	136,246
Nov. 30	73,004	93,662	75,582	109,450

Frozen eggs showed an increase the first five months, but a decrease the rest of the year over last year, and a decrease every month as compared to the five-year average.

TABLE 7. FROZEN FRUITS (000 POUNDS)

	1952	1951	1950	5-yr. average
Dec. 31	329,753	446,377	449,989	335,961
Jan. 31	300,743	431,711	279,255	312,047
Feb. 29	268,284	408,361	265,204	283,481
Mar. 31	235,999	245,331	251,119	247,283
Apr. 30	190,802	207,764	150,915	211,366
May 31	200,428	218,103	167,709	217,387
June 30	223,980	256,863	217,255	247,723
July 31	304,380	317,755	280,400	308,471
Aug. 31	314,912	380,264	333,030	347,334
Sept. 30	325,271	387,929	338,074	349,178
Oct. 31	322,057	384,323	363,602	348,926
Nov. 30	310,023	354,172	479,353	332,639

Frozen fruits were down, a decrease each month as compared to last year and the five-year average.

TABLE 8. FROZEN VEGETABLES (000 POUNDS)

	1952	1951	1950	5-yr. average
Dec. 31	492,909	425,279	425,170	340,566
Jan. 31	444,502	375,269	339,316	310,359
Feb. 29	397,312	328,520	305,316	277,310
Mar. 31	349,887	294,223	269,980	248,598
Apr. 30	311,643	272,111	241,992	225,937
May 31	300,402	270,206	221,119	213,881
June 30	346,031	290,321	235,955	235,802
July 31	385,474	369,311	283,334	280,234
Aug. 31	467,237	445,724	361,366	343,280
Sept. 30	524,406	515,766	430,576	395,972
Oct. 31	571,122	549,019	457,573	411,773
Nov. 30	564,822	525,223	454,011	398,513

Frozen vegetables showed an increase each month over last year and the five-year average.

TABLE 9. APPLES (000 BUSHELS)

	1952	1951	1950	5-yr. average
Dec. 31	22,821	33,561	33,621	27,030
Jan. 31	16,085	27,273	19,573	20,507
Feb. 29	10,805	20,135	12,502	14,235
Mar. 31	6,047	12,891	7,074	8,659
Apr. 30	2,890	6,931	3,645	4,549
May 31	1,026	2,844	1,298	1,765
June 30	269	680	165	.....
July 31	148	294	115	.....
Aug. 31	229	293	102	.....
Sept. 30	5,615	7,684	7,321	8,989
Oct. 31	26,844	26,271	34,451	30,957
Nov. 30	25,179	27,744	40,032	31,813

Apples declined to a considerable decrease for every month over last year, except October and November, and a decrease for every month of the year compared to the five-year average. Last year almost the direct opposite occurred, with an increase over the year before for every month except October and November.

TABLE 10. FROZEN FISH (000 POUNDS)

	1952	1951	1950	5-yr. average
Dec. 31	192,656	158,809	157,722	168,842
Jan. 31	148,225	130,880	125,516	124,692
Feb. 29	125,772	106,834	105,818	101,044
Mar. 31	113,499	96,367	87,133	84,241
Apr. 30	113,228	88,803	79,027	76,248
May 31	123,728	105,944	97,773	92,101
June 30	146,834	127,351	116,897	109,795
July 31	175,693	181,251	137,307	129,900
Aug. 31	180,295	161,628	182,356	146,091
Sept. 30	189,208	166,100	158,473	150,242
Oct. 31	198,488	171,424	166,105	156,445
Nov. 30	209,283	178,600	165,394	160,671

Frozen fish, as it did the previous year, held firm for each month over last year and the five-year average. Last year also increases were shown for for each month except August, and increases for each month over the five-year average. Last year there was an increase for each of the twelve months except August and an increase each months over the five-year average.

Fact Finding Conference Plans Future of Poultry Industry

AN ANALYSIS of what population increases, and the accompanying growth in the demand for food, will mean to the future of the poultry and egg industry, to be presented by Dr. B. T. Shaw, Research Administrator for the U. S. Department of Agriculture, will open the Institute of American Poultry Industries' 24th annual *Fact Finding Conference* in Kansas City, February 14.

Dr. Shaw will place special emphasis on the role sound research must play in helping the poultry and egg industry achieve the productivity and efficiency needed to fulfill its responsibilities and cash in on its opportunities in the years ahead.

"This industry has grown so rapidly in recent years," commented Chester B. Franz, chairman of the Institute Board of Directors, "that many of us have been afraid the bubble might burst one of these days. Dr. Shaw's look at the future should help people in the poultry and egg business keep that from happening by doing a better job of planning for tomorrow."

Other speakers taking part in the Opportunity Clinic Sunday afternoon include Roy A. Foulke, vice president of Dun & Bradstreet, Inc., who will point out the mistakes behind most business failures and how to recognize important danger signals in time; Clyde C. Edmonds, Utah Poultry and Farmers Cooperative, who will discuss the business policies and relationships that produce the soundest buying and selling operations; J. O. Parker, of the Pace and Parker law firm and Washington counsel for the Institute, who will explain the different courses poultry and egg legislation may follow from here, and industry's stake in uniting behind a positive action program that will result in laws and regulations that aid industry progress; L. B. Kropp of Swift and Company and Professor E. L. Dakan of Ohio State University, who will outline a cooperative plan for encouraging more students to train for careers in the poultry and egg industry.

Merchandising Clinic

The Merchandising Clinic Monday morning, February 16, will be built around the fundamentals of good merchandising, starting with the right product and following through packaging, market research, advertising media, point-of-sale promotion, publicity, and competition for the price-conscious housewife's food dollar.

At the Egg Processing Clinic Monday afternoon, two speakers will report on what procurement, packing and merchandising methods are proving most successful for shell egg operators, and the relationship between candled grade and cooked quality of shell eggs used in homemade cakes, custards and other foods.

One of the outstanding events of the whole conference will be the visual presentation of the tremendous growth in the use of egg solids (modern-day, improved dried egg products) in millions of dollars' worth of candy, cake mixes, batter and similar food items.

The Egg Processing Clinic will finish off with the up-to-date story of how new processing techniques are turning out the improved egg products needed to meet the quality and performance standards required by these food manufacturers, and a report of commercial tests on pasteurizing liquid eggs.

Tuesday morning, February 17, six speakers on the Poultry Processing Clinic will discuss the results of the Armed Services' experiments with sub-scald (140F) poultry; the practical reasons poultry and egg plants need and benefit from good sanitation programs; the best means of licking waste disposal problems in poultry and egg processing; the cost-saving benefits of mechanizing the handling of products and materials; what in-plant chlorination has done to improve shelf-life and cut cleaning costs in a plant that markets a large volume of chilled poultry to nearby areas; what OPS found in its recent country-wide survey of processing costs.

The Production and Procurement Clinic Tuesday afternoon will bring out the role sound financing plays in carrying out broiler and turkey marketing programs.

While the conference program will not start until Sunday, February 15, the exhibits will open at 10 o'clock Saturday morning, February 15.

Withdrawal of Goods From Cold Storage

FOUR legal points recently were ruled on by a higher court in the case of a packing company. The case involved the cold storage of 2,488 barrels of dill pickles for which the warehouseman issued a non-negotiable receipt. Storage was at not less than 32 F. Over a five month period the storer withdrew 1,894 barrels, then the warehouse demanded payment of all charges due, including charges on the barrels already withdrawn. The packer refused payment and the warehouseman refused further withdrawals.

The court ruled on the following points: (1) Did the warehouseman have a general lien on the remaining 594 barrels to secure overdue payment on those already delivered? The court held that he did have a general lien. (2) Was the warehouseman liable for 300 barrels of pickles which were frozen in his care when the freezing was caused by faulty insulation? The court held the warehouseman was liable for the full original value of the frozen pickles. (3) The court also refused to allow the warehouseman storage charges on the frozen pickles. (4) The court was asked to decide whether a warehouseman can lawfully buy stored goods at his own auction sale if it is conducted strictly according to law. The court held he could provided he accounted to the owner of the sold goods for the difference between the price the warehouseman paid for the goods and the price for which he sold them.

New York Association Refrigerated Warehouses

THE New York State Association of Refrigerated Warehouses held a joint meeting of its Executive and Legislative Committees on November 21 in Rochester. J. R. Shoemaker, Chairman of the Legislation Committee, reported on the proposed State Warehouse Act and stressed the fact that even though the Act was postponed for a year, there was still a lot of work to be done on the subject.

Keeping Bread in Freezer

TURING the past two years, an Eastern warehouseman has done without the services of a bread deliveryman and has bought a half-dozen loaves at a time, keeping the supply in their home freezer, reports a recent TRRF Bulletin. Another reports that the same treatment is satisfactory for rolls.

Floor Maintenance And Repair

INCREASING trouble with failure of floors has come with mechanized handling of goods in refrigerated warehouses. The questions that rise are numerous: In repairing a break in a concrete floor, is it necessary to chip out a square hole or can a "feather edge" repair job be used? Is it possible to repair a floor in a freezer without letting the temperature of the room rise? What is the best sort of threshold between a cooler and a freezer? (At that point, failure seems to be more frequent than elsewhere.) What sort of coating can be applied to wooden floors that will sustain hard wear for a reasonable length of time?

Some answers have been offered, but the answers have usually come along with the query: "If you find something better, please let me know because I hope there's a better answer than mine." Use of steel plate is an answer to the problem of wooden-floor failure, an expensive one and one involving difficulties. Laying two angle irons back to back in the thresholds between rooms of widely different temperature, with asphalt between the irons, is an answer to failure in that location but there may be a better one. Use of products such as "Tymstone" to patch freezer floors may be valuable, in fact, one member recommended this product on the basis of his own experience. Seemingly, innumerable products are offered for sale and many are not too encouraged about the possibility of finding which is most useful.—TRRF Information Bulletin.

Concentrated Grape Juice

A NEW "Superconcentrated" grapejuice which will help fill the armed services' need for full-flavor fruit juices in compact form, has been developed by USDA chemists. According to USDA the new concentrate can be diluted with six parts of water to make 75 percent more full-strength juice than is obtained from the same volume of frozen concentrates now on the market. USDA reports it can be frozen or held at cooler temperatures. In tests it was held at 35 F. for a year without spoiling.—Cold Facts.

Hagberg New Manager

CLIFFORD L. HAGBERG, following the death of Martin Larsen, has been appointed general manager of the Atlantic States Warehouse & Cold Storage Corp. Springfield, Mass.

Refrigerated Warehousing

Tax Amortizations May Exceed Estimated Costs

UNDER an agreement reached between The Defense Production Administration and the Bureau of Internal Revenue, applicants for a necessity certificate may exceed estimated costs or make changes in their construction plans without filing an amended application under the following conditions:

The facility constructed is the same as that certified even though actual cost exceeds the cost estimated in the certificate. These increase costs may arise from increases in materials, labor or from other factors.

The facility constructed varies from the facility certified, but the actual cost does not exceed the cost estimate in the certificate by more than 15 percent. The variations from original plans may include increases in area, size, or capacity or variations in construction.

If final plans or costs exceed estimates in the certificate by more than 15 percent, the applicant must file with DPA for an amendment to the original certificate.—N.A.R.W. Quick Sheet.

Committee Discusses Cold Storage Bond

A TWO-DAY session of a committee representing the National Association of Refrigerated Warehouses and officials of the United States Department of Agriculture was held November 24-25 to give consideration to the cold storage contract.

The entire cold storage contract was inspected and analyzed. The objections, criticisms, and suggestions made from time to time were discussed and considered. A resume of those comments were made and presented verbally and in written form by the committee. It is expected that a full report of the conference will be published. In the meantime, OPS has ruled that warehousemen may charge CCC for the bond as a new service after establishing ceiling prices for this service by application to regional OPS offices.

At the request of USDA, OPS has eliminated its original requirement that in billing CCC the bond charge be shown as a separate item. CCC will accept invoices only where the bonding charge is incorporated in the storage rate.—NARW Bulletin.

Egg Promotion Aids

A 3-PIECE kit of new egg promotion aids, published by the Institute of American Poultry Industries, will be furnished to retailers, through egg processors and distributors, to help stimulate increased sales during January Egg Month, a nationwide campaign sponsored by the Poultry and Egg National Board.

Specifically designed to tie in with the January promotion, each piece carries the campaign slogan, Eggs—the Key to Better Meals in '53, and boosts a 2-dozen budget buy.

All of the matching pieces are printed in brown and yellow on white. One is a 14¼x14½ window or wall streamer. One is an 8½x11 price display card for counter, wall or case. And one is a 3½x5½ recipe slip for carton or counter, for which the Poultry and Egg National Board supplied the recipe material.

"The supply and price situation, barring a drastic upset by Ole Man Weather should," Cliff Carpenter, president of the Institute, pointed out, "make eggs an unusually attractive buy for consumers in January. We're urging all suppliers to tie in with this drive by seeing that retailers are well supplied with fine eggs —and with the sales aids which the Institute of Poultry Industries is publishing."

Use of Antibiotics in Food Preservation

DURING the past several years, various research agencies have explored possibilities for use of antibiotics as aids in the preservation of foods. Complete success has not attended these efforts, but some interesting and possibly promising results have been published. Latest publishing results are those of Tarr, Southcott and Bissett of Pacific Fisheries Experimental Station, Vancouver, B. C., in "Food Technology" for September, 1952. They used flesh foods (meat and fish) and started with a very large number of antibiotics and later reduced the number of the two most promising, which were aureomycin and terramycin. The former proved most effective in their tests and caused marked inhibition of spoilage in both minced and steak flesh. Thus it seems that antibiotics may eventually prove helpful in nonsterile foods—that is, foods that are not canned.—TRRF Information Bulletin.

Hagen Heads Los Angeles Chamber of Commerce

ROY M. HAGEN, past president of AWA and NARW has been nominated as president of the Los Angeles Chamber of Commerce for 1953. The nomination is tantamount to election. Mr. Hagen who is president of the California Consumers Corporation, is a native of Lincoln, Neb., but has lived in California since 1901. He was graduated from the University of California with a Bachelor of Science degree in 1915. Before joining the California Consumers Corp. in 1931, he was secretary-manager of the California Cattlemen's Assn., and general manager of the Sunmaid Raisin Growers. He is also chairman of the Governor's Advisory Committee on Food and Nutrition for Civilian Defense. He was president of the American Warehousemen's Association 1953-1954 and president of the National Association of Refrigerated Warehouses for two years, 1940-1942.

Training Conferences

SPECIAL attention is again called to the training conferences to be held during February, March and April, sponsored by The Refrigeration Research Foundation and the National Association Refrigerated Warehouses. These Conferences will be held as follows:

February 2-5, Hotel Jefferson, St. Louis, Mo.

March 16-19, Hotel St. Claire and Municipal Auditorium, San Jose, Calif.

April 6-9, Sheraton-Belvedere Hotel, Baltimore, Md.

Social get-together sessions are planned for the evenings just before the beginning of each Conference. All members of the industry are invited to attend. The fee per person is $47.50.

Apple Holdings Down

APPLES held in refrigerated warehouses in Winchester, Va., as of December 1 totaled approximately 662,000 bushels, as compared with 773,314 bushels on the same date a year ago. Two of the four plants have smaller stocks than a year ago, but all have less than five years ago at that time, a short apple year. Some storage stocks were being held for the Christmas and New Years holiday trade; others to supply regular trade sources. The apple market was reported quiet at most Appalachian shipping points and movement was only fair, according to the Market News Service of the U. S. Department of Agriculture.

Refrigerated Warehouses Store Blood Serum

BLOOD serum supplies are now being stored in 27 public refrigerated warehouses across the nation as a safeguard against possible large scale bombing of American cities, according to the National Association of Refrigerated Warehouses. The serum, which is in the form of blood groupings and blood typings, is being handled free of charge by warehousemen in cooperation with the Civil Defense Program.

The storage space allotted for the serum is of the cooler room variety since the serum has to be stored in temperatures ranging from 35 to 50 F., to maintain its effectiveness, NARW said. Eventually, according to Civil Defense officials, the blood serum is expected to be stockpiled in 47 major cities, strategically located throughout the country.

Civil Defense has expressed appreciation for the patriotic response of the refrigerating warehousing industry, and in addition, expressed their gratitude for the many responses from other warehousemen who said they would be glad to cooperate. "The refrigerated warehouse industry is proud to perform this service for our country," NARW said. "But a more important job than ours is the job of all Americans. That is the giving of blood whenever physically possible. Who knows—you may receive it back some day."

New Regulations on Wages and Salaries

THE War Stabilization Board has published a new "Cross Reference Sheet" known as WSB Form 504. It is designed to aid employers in filing for wage adjustments and lists (1) the kinds of adjustments, (2) applicable WSB ruling or regulation, (3) application form to be used, (4) data to be included in the application, (5) number of copies required and (6) where to file. Copies are available from the regional WSB office.

Wages of less than $1.00 per hour may now be increased to $1.00 per hour without prior permission of WSB under GWR 22. — N.A.R.W. Quick Sheet.

Food Processing School

THE Food Technology Department of the Oregon State College, Corvallis, Oregon, announces a food processing school to be held February 9-13. A detailed program and schedule of the Conference will be sent to those who are interested.

Practical Refrigerating Engineer

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS

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THIS MONTH

The subject of scale control and scale removal was discussed in a paper presented at a meeting of the Chicago Chapter N A P R E. The discussion applied to evaporative condensers and water towers in refrigerating plants.

A fitting eulogy to the late Emerson Brandt, former secretary of the N A P R E was presented at the annual convention by A. M. Casberg, past president.

Another answer to a question on mixed calcium and sodium brine readings, published in May, 1952, is offered by Robert T. Brizzolara.

Scale Control and Removal in Evaporative Condensers

D. R. Welser
Wright Chemical Corp.
Chicago, Ill.

IN AN evaporative condenser, scale, corrosion and living organism deposits are generally so closely related to the loss of heat transfer that it is often difficult to determine which one causes the most trouble. Any one of these deposits will cause a loss of heat transfer and may be a major or minor cause of what we term scale build-up.

The average scale removed from an evaporative condenser will consist of from 25 to 50 percent calcium carbonate, smaller amounts of silica, magnesium and sulfate. The iron may run anywhere from 3 to 20 percent and the organic may run from 5 to 40 percent. On the other hand, we run into unusual scales that may consist of as much as 50 percent sulfate and at other times the organic may run 50 percent, and silica under certain conditions may be higher. In hard water the carbonate may be as much as 70 percent of the total scale.

An evaporative condenser is in effect an air washer and picks up most of its contamination, other than scale forming materials, out of the air passing through the unit. The question of the type and amount of scale will depend upon the location of the unit, temperatures and chemical content of the water. Chicago city water has approximately 1.0 pound of potential scale forming solids in each 1,000 gallons. A part of those solids will precipitate as a sludge and a part of it will adhere as a scale depending on the skin temperature and solids concentration in the unit.

Calcium bicarbonate starts to break down at atmospheric temperature and at about 135 F. starts to break down more rapidly, and when the temperature reaches boiling, there is a very rapid breakdown with precipitation of calcium carbonate and the release of CO_2 into the atmosphere. Actually the break-down moves very slowly at lower temperatures but we find any number of cold water lines, which have a large volume of water flowing through them, getting a carbonate scale. In fact, where concentrations of solids in the water are allowed to rise too high, we find scale in tube ice machines and on the rolls of flake ice machines at freezing temperatures.

An evaporative condenser performs its function by evaporation of H_2O, thus leaving the solids in the remaining recirculating water. When these solids which consist of carbonate, silica, magnesium, sulfate, etc., reach their solubility limits, they will go out as a sludge or scale, depending on the skin temperature of the heat transfer surface. If we take a glass of water and keep adding sodium chloride, which is ordinary table salt, to the water the first part of the scale will dissolve and eventually the water will not take any more and the scale will accumulate on the bottom of the glass. This is exactly what happens in an evaporative condenser where the concentrations are allowed to go above the solubility limit of the solids. The only way this supersaturation can be controlled is by proper blowdown and dilution of the recirculating water with fresh water.

Solubility Limits

Depending upon the type of equipment, location, etc., we set certain solubility limits. This may be a concentration of let us say 15 times. Suppose the evaporative condenser holds 200 gallons of water; after we have evaporated 3,000 gallons of water we have reached our solubility limits and must blow-off part of this water and dilute the recirculating water with fresh water. The concentration can reach the set limit rapidly, especially on a hot summer day,

Paper read at meeting of Chicago Chapter N.A.P.R.E.

and normally we use a small continuous bleed-off to keep the concentration under control.

There are four common methods of controlling scale problems in evaporative condensers: external treatment of the make-up, manual cleaning, chemical cleaning, and internal treatment of the make-up.

Controlling Scale

External treatment of evaporative condenser make-up water in the Chicago area has usually been found to be unnecessary because of the comparatively good water here. The small additional advantage gained in scale control apparently does not offset the cost of this method. In addition, internal treatment would also be necessary in order to control the contaminants picked up from the air.

Manual cleaning of evaporative condensers, especially those with fin type coils, is very difficult and it is practically impossible to manually clean any type of evaporative condenser.

Chemical cleaning will clean the condensers. However, this can be very expensive. Normally an inhibited muriatic acid is used on this type of work. However, there is no inhibitor that will completely protect the metal in the unit from the acid. Most evaporative condensers have some galvanizing and this disappears soon after the muriatic acid is added, allowing the bare steel to be attacked very rapidly while in contact with the acid.

When using acid it is advisable to heat the acid up to a minimum of 175 F. and recirculate the solution from 2 to 10 hours. Unless special pumps are used, the brass impellers in the circulating pump of the evaporative condensers disintegrate during the cleaning period. The coils can be removed and put in a vat with acid. The vats are then heated and circulation obtained by swishing the coils up and down. This is, however, a very difficult maneuver and very time consuming.

Probably one of the worst scale problems we have encountered was in equipment where the plant personnel used 40 carboys of acid to clean a 75 ton evaporative condenser unit, and after using the 40 carboys the unit still wasn't clean. However, there is some question as to whether a slightly less amount might have been used if the acid had been applied properly. The metal loss was so serious that I doubt whether the coils would stand over three additional cleanings before new coils would be necessary.

Internal treatment of make-up water has proved most satisfactory on Lake Michigan water because corrosion and algae in addition to scale can be economically controlled at the same time. By keeping the surfaces free of scale, corrosion products and algae we obtain good heat transfer. Normally the resulting power saving and high load efficiency under summer conditions more than pay for the internal treatment and gives the customer a direct profit. Where the evaporative condenser is badly scaled, we prefer, if possible, to remove the scale gradually by the use of internal treatment or by shock doses of internal treatment and preserve the metal in the unit, rather than using the quicker acid method with its consequent corrosive attack.

Data Required by Chemist

Certain data on the evaporative condenser and the cooling system are required by the water chemist to properly evaluate the problem and make intelligent recommendations. These data usually are:

1. Composition of the make-up water.
2. Composition of the cooling water.
3. Scale and corrosion samples.
4. Organic debris samples.
5. Pipe or metal samples.
6. Rate of evaporation in the evaporative condenser.
7. Type of evaporative condenser and rated capacity.

Proper control of concentration and internal treatment with supervision of reliable water treatment engineers we believe, is the most satisfactory method of maintaining clean heat transfer surfaces and economical operation.

The NAPRE Connvention Committee-1952

Portion of the Dallas group which successfully put over the 43rd Annual NAPRE Convention with such high degree of success are pictured above: Left to right, Warren B. Cunningham, Dallas Power and Light Company, Chairman; Tom Weatherford, Jr., Chief Engineer of Alford Refrigerated Warehouses, Dallas Chapter President and Entertainment Chairman; F. B. Reik, Jr., Accurate Machine Works, Secretary, Dallas Chapter; J. D. Sims, Chief Engineer, U. S. Cold Storage Corp., Dallas Plant, Finance Chairman; and D. F. "Pete" Bancook, Owner, Bancook Maintenance Company, Convention co-Chairman and Operator of Pete's Hospitality House.

Other members of the committee not pictured were O. K. Irvine, Chief Engineer, Southland Corp., Welcoming Chairman; W. W. Blocker, Housing Chairman; L. P. Reiss, Consulting Engineer, Registration Chairman and W. F. Graham, Assistant Chief Engineer, Alford Warehouses, Publicity and Advertising Chairman.

Eulogy on Emerson Brandt

ON JAN. 18, 1952, the National Association Practical Refrigerating Engineers lost an extraordinary member and loyal servant. Emerson Andre Brandt, for 18 years the secretary of N.A.P.R.E., passed away suddenly on that date.

At the 43rd annual Convention of N.A.P.R.E., held in Dallas, Nov. 12-14, 1952, Angus M. Casberg, a past president eulogized the late Mr. Brandt. The Board of Directors felt that Mr. Casberg's work was exceptionally well done, and resolved that it should be published in the official organ of N.A.P.R.E., ICE AND REFRIGERATION, in January 1953, the anniversary of Mr. Brandt's sudden departure. Following is the text of the Eulogy:

IT IS our rare privilege, sacred duty, and solemn responsibility to pause with reverence for a few moments to pay tribute to the memory of Emerson Brandt, who served us, so devotedly as our Secretary for eighteen years.

God, in his infinite wisdom, has taken from our midst one of the best of whom he had created in his own image. Mere words are futile in this humble attempt to express the emotions or inner feelings of our regard for him, which will linger in our hearts as long as we shall live.

We are speaking of a man, who had the courage and strength of character to make a success of every worthwhile project he ever attempted. He overcame almost impossible obstacles in his duties with the National Association of Practical Refrigerating Engineers, and in other walks of life. His character was one which we should all be proud to emulate.

As a devoted husband, he faithfully and cheerfully cared for his wife, Mary, through several periods of illness, without burdening his friends with his mental anguish. His daughter, Carol, was blessed by having a father like Emerson. They were constant companions, and she received the best parental training that only a man of his character could provide.

Undoubtedly, Emerson was indebted to his mother for most of the excellent qualities which we found in him. He must have received a wonderful inspiration and training from her as a youth, and she can be justly proud of him, and his influence upon his contemporaries.

As a professional engineer, he was widely known for his ability, and the contributions he unselfishly made to the science of refrigeration. Those who knew of his actual ability always felt that he had sacrificed a wonderful engineering career to serve as our Secretary. It was characteristic of him to feel that he could be of greater service to mankind by devoting his life to the educational activities of the National Association of Practical Refrigerating Engineers than as an engineer in private practice.

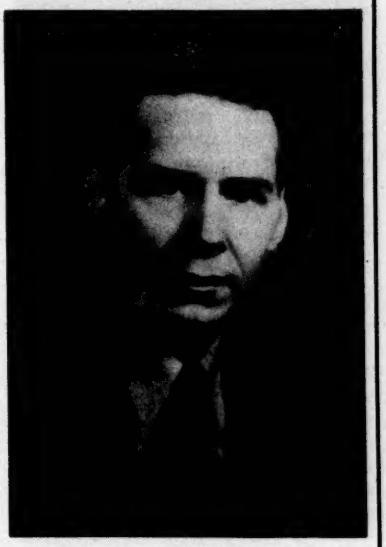
As a patriotic American citizen, he was deeply interested in national affairs and took a leading part in the affairs of his community at Glen Ellyn, Ill. At the time of his demise, he was serving as member of the local school board, which is extremely important in these times of uncertainty. He was an active member of the Congregational Church which administered his last rites. He was also instrumental in the organization of the Glen Ellyn Sunday Evening Club, a civic organization interested in national and world affairs.

Emerson joined as our National Secretary in the year 1934 with an excellent background to carry out the multi-phase duties of that office. He had a Master's degree in Mechanical Engineering from Purdue University, as well as several years of practical experience as a refrigerating engineer with large utility concerns. He was also the co-author of a technical book, entitled "Practical Ice Making."

The details of his success as our Secretary, and what he accomplished for the NAPRE through his constant devotion to a task which he dearly loved, would require more time and space than we have been granted. His generous contributions to the success and welfare of the NAPRE are included in the records for the past eighteen years, and indelibly engrossed upon the memories of those of us who have worked in close contact with him.

There was no fanfare or anything spectacular in connection with his accomplishments, but that constant and steady purpose of mind which is so essential to the success of an organization such as ours.

It is doubtful if many of the officers who served with him through the years fully appreciated the sterling character and true value of the man until their tenure in office had expired. He always worked in perfect harmony with all of them, and was as ready to accept suggestions as he was to offer sound advice. A summation of his accomplishments for the NAPRE could not be better stated than by saying with all sincerity by those of us who have worked with him for many years, that if Emerson Brandt had not been



Emerson Brandt

our Secretary, the National Association of Practical Refrigerating Engineers would not be in existence today.

No man could possess all of the virtues and strength of character which we have enumerated without a strong religious and spiritual foundation. Emerson, in his last days as a mortal among us, unknowingly gave to us, the basic fundamentals of a complete faith in God.

Emerson Brandt, a man only forty eight years old, still in the prime of life, with every mortal reason for living, fully demonstrated that he was entirely prepared to take the final step into eternity. Less than a week prior to his demise, while he was still in good health, he told his loved ones and close friends, that God had given him many full years of usefulness and happiness, and he was fully prepared to go at any time. He gave them an outline of detailed plans concerning his funeral services and the disposal of his body. He had also made all legal preparations for the financial protection of his wife, Mary, and his daughter, Carol. On the fifth day he was stricken without any warning, and passed away in a few hours.

Our first reactive thoughts might be, that Emerson had a premonition that his remaining days were few, or that it was uncanny that he should make these preparations, or perhaps there was something supernatural about it. There is only one logical solution to it. If our faith, whatever it may be, is real, it proves conclusively that Emerson had that complete faith in God.

Thus, we have been bequeathed an unexpected challenge. We all know that Emerson's character and life were beyond reproach. However, even with the non-sectarian nature of our organization, we did realize the strength of his faith. The only evidence we ever had, was the Christian manner in which he treated his fellow men in all of his dealings.

We, as individual members of the NAPRE have never had a greater mortal loss than the passing of Emerson Brandt, who was the living inspiration of our Association for eighteen years. No one could have given us more and taken less. We owe him a debt that may only be repaid in part to his memory by striving with all our hearts to carry on the great work of the NAPRE, which is dedicated to the assistance and the education of young engineers, thereby devoting ourselves to improvement of others less fortunate.

We should be grateful rather than mournful that we have been given the influence and guidance of an Emerson Brandt for eighteen years, who has justly earned his place in God's Kingdom. He has left us a rich heritage of faith and accomplishment. Let us here, and now, dedicate ourselves to the pleasant task of making the most of what has been bequeathed us.

In closing, we ask God's blessing and comfort for his loved ones.

— ANGUS M. CASBERG

NAPRE Members Attend ASRE Convention

SEEN at the ASRE convention in November were past presidents Walter E. Bernd, Howard H. Peterson, and George B. Bright, Sr. It is reliably reported that they were well looked after by Tom Weatherford, President of the Dallas Chapter, who flew to the New York affair.

Personality

LLOYD E. BEARD, a member of the Chicago Chapter, NAPRE, recently became affiliated with the Kraft Foods Co., Chicago. Mr. Beard will serve on Kraft's mechanical engineering staff at their headquarters. A native of Chicago, this member of NAPRE has specialized in refrigeration, air conditioning, and heating. He had been with the Austin Co. since his inactive duty status with the Army at the conclusion of hostilities of World War II. In addition to his NAPRE activities, Mr. Beard is active as a Scoutmaster in his son's troop.

N A P R E Question Box

H. G. Venemann, Professor of Refrigeration, Purdue University and chairman of NAPRE Educational Committee, answers members operating probems monthly in this column. Send questions to Chairman H. G. Venemann c/o Purdue University, West Lafayette, Indiana.

More on question 917 (May, 1952).

Mixed Brine Reading

Question No. 917: It will be appreciated if you could help me with a problem to which I cannot find the answer. The problem in question is on an ice plant worked by an ammonia compressor (Frick). When the plant was first installed the initial brine charge was made with calcium chloride to correct strength but subsequently owing to the scarcity of calcium chloride and its high cost when available, the owners of this plant added common salt (sodium chloride).

Now I find that there is still a formation of ice on the evaporator coils even though the strength of the mixed brine reads 1.160 specific gravity at 60 F. I find from tables of these solutions that calcium chloride at this hydrometer reading freezes at 3 F and sodium chloride at this reading freezes at minus 3 F. The percentage of sodium chloride used in comparison to calcium chloride is roughly 20 percent. The suction pressure (average) is approximately 16 lbs. pressure, but the brine will not come below a temperature of 19 F; this I think is due to the formation of ice on the coils acting as an insulator.

Please let me know how I should take this reading? In addition, there is a suspected leak of ammonia in the evaporator coils. What test would you suggest making on the brine to be certain of this. You should bear in mind that there is a mixture of sodium chloride and calcium brine in varying percentage. It is also pointed out that no dichromate has been used.— RALPH B. WYLDE, Trichinopoly, South India.

ANSWER: Apparently the discussion of mixing calcium and sodium brines as brought up in Question 917 will not "down" because I have received comments of late from several engineers who have reported difficulties to me.

In these cases the operating engineers properly took samples of the brine in a flask for experiment, adding salt thereto. They found that the salt dissolved but not completely, leaving a turbidity in the brine and dropping a heavy white precipitate, which they concluded was undissolved sodium chloride.

This undissolved precipitate proves not to be sodium chloride but in most instances it is an insoluable sodium, magnesium or calcium carbonate which frequently is in our salt and calcium purchases. This situation of turbidity and precipitate can be observed with summer table salt as sold today.

A few drops of muriatic acid placed into the solution will clear this brine up perfectly and indicate the carbonate presence with small CO_2 bubbles passing off.—Robert T. Brizzolara.

Charts on Heat Losses

Question No. 940: Where will I find charts on radiation heat losses through walls of various types of construction?—L. J.

ANSWER: The question as stated is vague. It might be interpreted to mean "radiation effects" of various types of wall surfaces, or it might mean "heat transmission losses" (sometimes misnamed radiation losses) through walls of various types of construction.

If the latter interpretation is correct I would refer to the 1951 Guide published by the American Society of Heating and Ventilating Engineers which publishes several tables, giving the overall heat transmission coefficient, U, of many types of construction. Nearly all text books on refrigeration publish similar tables for insulated structures. These values when placed in the equation, $Q = AU(t_o - t_i)$ will enable one to compute the heat transmitted per hour.

If the questioner desires information on radiant heat I suggest the following references:

1. Panel Heating and Cooling Analysis, by Raber and Hutchinson, published by John Wiley and Sons.
2. A.S.H.V.E. 1951 Guide.
3. Industrial Heat Transfer, by F. W. Hutchinson, published by Industrial Press, 148 Lafayette Street, New York 13, New York. This book is very recent, 1952, and will, no doubt, give charts, tables and formulae by which radiant heat problems may be solved.—H. G. VENEMANN.

pH Values

Question No. 941: I've just taken over a job as operator of a refrigeration plant. With no chemical background and little academic or engineering education, I find I'm lost on such references as pH values. What is meant by that term? And what pH number is proper for my

condensing water? I have a tower for cooling purposes.—D. F. K.

ANSWER No. 1: I think that you are to be commended for wanting to know something about the meaning of pH values, and also about the proper pH value for your cooling tower condensing water. However, let me warn you that " a little knowledge is a dangerous thing," and to place your chemistry problems in the hands of a reliable chemist familiar with this kind of work.

What is the meaning of pH values? All solutions are either acid, neutral, or alkaline. If a solution is strongly acid it is given a low pH value such as 2, if it is neutral it is given a value of 7; and if it is strongly alkaline it is given a value of 12 or more. pH values from 7 on down indicate gradual increases in acidity; values from 7 on up indicate gradual increases in alkalinity.

The most practical method of determining the pH of a solution is by means of certain dyes called indicators, which undergo color changes at different points on the pH scale. So much then for what pH means and how it may be determined. As a rule the pH value of cooling water should be between 7.1 and 7.5 which makes it slightly alkaline. In some cases, however, it might be advisable to have the water slightly acid for a short time in order to remove certain kinds of scale. As stated above a little knowledge is a dangerous thing, so please take the advice of a responsible water treatment firm rather than depend upon your own limited experience. For a list of these see Buyer's Directory, 1952 N.A.P.R.E. Operating Data Book.

I recommend the following references: Principle of Refrigeration, by W. H. Motz, 3rd edition. Algae, Scale, Corrosion Control, G. Frank Lebrecht, 1947 N.A.P.R.E. Operating Data Book. Condenser Scale and Algae Control, H. J. Hoolbrook, 1942 N.A.P.R.E. Operating Data Book.—H. G. VENEMANN.

ANSWER No. 2: The pH value is technically defined as the reciprocal of the logarithm of the hydrogen ion concentration. It is actually represented by any number between 0 and 14 and indicates the degree of acidity or alkalinity. The pH value usually is a measure of the corrosive or scale-forming properties of the circulating water, but this is not exactly correct because these properties are actually due to the constituents rather than to the pH value which the constituents produce.

The dissolved solids in the circulating water will consist predominantly of those substances which produce scale and these cause an alkaline reaction. It is for this reason that the pH value of the circulating water is usually above 7.

What is the recommended pH value of cooling tower water? A pH value of 7.1 to 7.5 is recommended because the pH value for pure water is 7. If the reading were less than 7, the water would be acid, and hence corrosive to metal parts in the heat exchanger equipment. Generally speaking, a pH value over 7 is scale-forming. By carrying the pH value of the circulating water from 7.1 to 7.5 a slight scale will form and protect the heat exchanger equipment. If carbonates are formed and if the pH value is too high, serious damage may result to a wood cooling tower because of delignification.—The Marley Co. Inc.

Maintenance Time Table

Question No. 942: In my new job with a food processing plant, I have a considerable number of centrifugal and rotary pumps. None have been overhauled or maintained for years. Do you have, or could you suggest where I may find a maintenance time table that I can follow (as well as show to my boss)?—D. F. K.

ANSWER: *Every year* remove rotating element. Inspect thoroughly for wear—ordering replacement parts where necessary. Check wearing ring clearances. Generally they should be approximately no more than .003" per inch of diameter of wearing rings.

Remove any deposit or scaling. Clean out water seal piping. Measure total dynamic suction and discharge lifts as test of pipe condition. Record figures and compare them with figures of next test.

Inspect foot valves and check valves—especially the check valves, which must safeguard against water hammer when pump stops.

Every six months replace packing —using grade recommended by pump manufacturer. Be sure lantern rings are centered in stuffing boxes at the entrance of water seal piping.

Check shaft sleeves for scoring that would accelerate packing wear—ordering new sleeves if needed.

Check alignment of pump and motor—shimming up units as needed. If misalignment recurs frequently, inspect entire piping system. Unbolt piping at suction and discharge nozzles to see if it springs away—indicating strain on casing. Check all piping supports for soundness and effective support of load.

Every three months drain lubricant, washing out oil wells and bearings with kerosene. In the case of sleeve bearings, check to see that oil rings are free to turn with the shaft. Repair or replace if defective. Refill with lubricant recommended by your pump manufacturer.

Measure bearings for wear, replacing if excessive. Generally, allow 2 thousandths of an inch clearance—plus 1 thousandth of an inch for each inch or fraction of an inch of shaft journal diameter.

Every month check bearing temperature with thermometer, not by hand. If anti-friction bearings are running hot, probably they have too much lubricant. Relieve. If sleeve bearings are running too hot, probably they need more lubricant. If change in lubrication doesn't correct condition, disassemble and inspect bearing. Or possibly the alignment of pump and motor should be checked.—H. G. VENEMANN.

NAPRE Department

New Questions

De-Icing Water Tower

Question No. 943: We have a 300-ton marley induced draft cooling tower on the roof of our plant. It is equipped with a single two speed fan. The water is distributed through the tower from a flooded pan at the top with the water feeding through velox nozzles in the bottom of the pan. Each year we experience considerable difficulty with icing. What practices are generally followed in the industry to prevent icing?—J. N.

Income Tax

Question No. 944: One interesting question has arisen in our assessment of income tax.

They have made a formula to calculate the total production, that is 4 units of electricity makes one block of 1½ maunds or 102 lbs. and by multiplying they make 300 lbs. cans on the same base. As they are not practical engineers, they press on this point.

Being an engineer, I argue that this is wrong so I am referring this question to you.

1. 1¼ maunds can take much less time to freeze than 4 maunds or 300 lbs. weight per weight.

2. The weather plays an important role in the production especially in Punjab where there is a long rainy season and no sale of ice while the plant runs to maintain the temperature.

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3. Machines are of different capacities and of speeds, high speed, low speed, some are flat belt driven, some are V belts, thirdly direct coupled and some are on counter shafts.

4. Different types of condensers and the degree of water on them.

5. Due to the larger number of ice factories here there is much competition which fluctuates the sale of ice. Even then the plant has to run to maintain the temperature.

In the light of these and other points, what is your expert opinion on the indefiniteness of forming any correct formula.—President Ice Manufacturers Association, Lahore.

Temperature of Ice Storage Room

Question No. 945: I have an ice storage room which I would like to keep at 28 F to 30 F. The dimensions of the room are 17 x 37 x 8 ft. Could you please tell me how many feet of ¾-in. steel coil I'll need if I refrigerate this room with salt brine. My brine temperature will be between 20 F and 25 F. Due to a water situation in this community I'm unable to use a lower brine temperature and still make clear ice. Also could you tell me the size pump I would need and what type. The brine will have to be pumped approximately 10 feet in height. What size motor would be needed for this pump?

Also would it be possible for you to send me a sketch on the best hook-up we could make. I would like to put in a hot water defrost line, too. My present coils are ceiling coils, however, I can add wall coils if necessary.—R. T. S.

A Practical Solution For Heaving Floors

Professor H. G. Venneman, Purdue University, Conductor of The Question Box, sends in the following comments:

IN AUGUST 1950 I answered a question submitted by R. H. Crossfield of the Crossfield Ice Co., Griffin, Ga., relating to a method of correcting "heaving floors" in his storage room. This is one of the few letters I have received from people for whom I have answered problems. His solution was really very good. My answer was as follows:

"I have not had any experience with corrective measures for heaving floors. The article referred to in the July issue of ICE AND REFRIGERATION was sent in by J. W. Liddell of the Armstrong Cork Co., although it was written by Messrs. Cooling and Ward of England.

"I suggest that you try 4 inch pipe spaced about 5 or 6 feet apart under the present raised area. This pipe should have risers above the ground at the back of the building, and terminate under the floor somewhere near the front of the building. If possible they should have a slight downward grade from the back to the front. It is quite possible that this will correct the situation without further ventilation. I am assuming that your floor is properly insulated and that the subsoil conditions are not unusual. Of course, if you have a water table below your floor, it may have to be drained off before you may expect any relief."

Evidently my remedy was not very practicable, but Mr. Crossfield was able to correct his trouble by a method of his own. I thank him for revealing to me and to our readers his successful solution, which was also used by the Capitol Fish Co., of Atlanta, with equally good results. His letter which follows tells the story:

We tried to drill under our storage and place the 4 inch pipes as described. However, after quite some effort we failed to accomplish this due to the difficulty of drilling horizontally 78 feet through frozen ground. We have been able to cure our "heaving," however, by digging a tunnel about 2 feet wide and 6 feet deep under the middle of the storage floor. At some points under the floor we found solid ice to the depth of three feet. However within a couple of months, after the completion of the tunnel, the floor had returned to normal. After the floor had settled, we went in and shored it up to give it additional strength. This method, although the hand digging in frozen ground was slow, proved to be relatively inexpensive compared to alternative solutions. We used heat lamps focused on the head of the tunnel overnight to make the next day's digging easier. We have been through with this project almost a year and have noticed no ill effects, except that you must be very careful in stripping floor for frozen merchandise directly over the tunnel.

After our success, Capitol Fish Co., Atlanta, used the same method to cure their heaving. Their operation was much larger than ours in that they had to dig over 400 feet of tunnels. Their floor has also come back to normal. I hope this information will be helpful to you at some future date. I also want to thank you for your help on this matter.

News Notes and Chapter Activities

Chicago

JOHN FORTI

THE meeting of December 2 was held at 7:30 p.m. in the Chicago Engineer's Club. It was a business meeting at which the president appointed many new committees. Names are withheld pending acceptance by a few members who were not present.

Dick Kelahan and Bert McKenna gave a lengthy report on Los Angeles and New Orleans Chapters' ways of boosting membership and attendance at meetings. Chicago Chapter aims to follow their policy. It was mentioned that all papers read at the National Convention will be printed in ICE AND REFRIGERATION.

Three new members were voted on and accepted: Mr. E. S. Marrs of Central Storage, Mr. Edw. S. Mendum of Wright Chemical Co., and Mr. Lloyd E. Beard of Kraft Foods Co., Chicago.

Eugene Rytlewski started the educational program on purgers, Sec. 5, Chapter 8; several important points are listed: Foul gases in a system will raise head pressure, thereby raising horse power consumption which can prove to be costly. Ammonia systems are more vulnerable to foul gas troubles due to operating at lower suction pressures. Discharge temperature in ammonia system should be held below 300 F. to prevent ammonia from breaking down. Heavy air entrained in any system falls into the receiver and tends to hold liquid ammonia up in condenser. Mr. Rytlewski explained the use of the manual purging on the high side of a system, and diagramed on the blackboard the hook-up of an automatic purger. In any purger used, hot foul gases from the receiver will rise into cold purge drum, liquid condenses and drops back into receiver. Foul gases and air are then expelled into an open water drum.

Dick Kelahan introduced the guest speaker for the evening, R. K. Lee of Armstrong Machine Works. Mr. Lee passed out bulletins describing the Armstrong purger and principles of its operation. He stressed proper hook-up and use of the mechanical float. Armstrong according to the speaker, makes humidifiers, steam traps and automatic purgers. Their automatic purger was designed from their steam trap.

The next regular meeting on December 16, 1952, was voted on and cancelled due to Christmas holidays.

San Jose

E. W. ROGGY

SAN JOSE Chapter held its regular meeting on December 8 and elected the following members to office for 1953:

President, Gordon Rose, San Jose.

Vice-President, E. W. Roggy, San Jose.

Secretary-treasurer, L. E. Abbott, Santa Clara, Calif.

At this meeting Joseph Sullivan, Chief Engineer for Modern Ice and Cold Storage Co., San Jose, presented his paper "Good Maintenance and

Operating Procedure" which he and Professor Harold P. Hayes had teamed up on at the NAPRE Convention in Dallas.

December 22 was the date set for our annual Christmas Meeting when we will make a plant visit to a new air conditioning installation at Moffett Field, Mountain View, Calif. The field trip will be followed by a Christmas Party at Wieland's Gardens, Wieland's Brewery, San Jose.

Colton

H. O. BONTER

ON NOVEMBER 12, 33 members and friends had an inspection tour of the California Electric (New) Power Plant at Highgrove, Calif., which is a very interesting all weather outdoor plant, the only housing is for the control room and offices and store rooms. At present time the plant consists of two 30,000 kw 13,800 volt Turbin driven generators. Another unit is under construction which will be 40,000 kw. The generators are cooled with hydrogen. There are 16 miles of pipe lines serving the plant, each unit is separate within itself. The steam from each turbine is exhausted into large condensers, then water pumped back into the boilers with about 1,000 gallons of makeup water a day. All water is chemically treated, the cooling water for the condensers cooled over large cooling towers. The supply of water comes from wells on the property, also from irrigating canal. The plant is built as nearly earthquake proof as possible. The turbines run so smooth that you can stand a nickle on the edge of it.

The Power Company first served Goldfried and Tonopah Mines and in 1912-13 they built a line from the three plants at Mono Lake to San Bernardino and now they serve large portions of the southwest.

The group enjoyed the very interesting trip through the palnt.

St. Louis

K. M. HOLADAY

ON NOVEMBER 17, 1952, members of the study class met at David Ranken School of Mechanical Trades and Instructor John Dabbs led the group in a review of chapters 10 and 11 of the NAPRE course. Questions and discussion indicated that many members are finding the study principles to be a practical aid to smooth plant operation. It has helped to solve some riddles and to correct some faulty practices.

National Convention delegates Stan Tatalovich and Ed Lotte gave excellent reports on both the educational and entertainment programs of the Dallas convention. The chapter expressed appreciation of the Dallas committee's hospitality in arranging a successful meeting and pleasant entertainment of our delegates. It was also moved that the chapter should express appreciation to our delegates' employers. Griesedieck Brothers Brewing Company, and Swift and Company, for their co-operation in allowing time for participation in the meeting.

Tentative plans for the chapter Christmas party December 15 were approved.

Los Angeles

Theodore J. Peukert, Secretary and Treasurer of the Associated Refrigerating Engineers, passed away suddenly Friday morning, November 21, while on a sales trip. He was a native son, born April 12, 1903, on what was then his father's August Peukert ranch at 77th and San Pedro Sts., Los Angeles. Mr. Peukert was a member of NAPRE.

"Ted" Peukert

Mr. Peukert or "Ted" as he was affectionately called by all who knew him, began his career in the engineering industry in 1921 when he started as a delivery boy at the Gay Engineering Corporation. He later became welder, then erecting superintendent in charge of construction, then general superintendent of construction. In 1938 he became affiliated with Associated Refrigerating Engineers as Sales Engineer, and was an officer of the Corporation, namely, Scretary-Treasurer. He was part owner of the Corporation and continued in this capacity until his sudden and untimely death. He leaves a widow, Zulika, his son, Theodore J. Jr., four brothers, Albert, August, Joseph, William and one sister Anna Marie.

Memphis

CHAS. A. CONLEY

AT THE meeting on November 19, H. L. Todd, talked on the King course, pages 192 through 201. The subject was various drives for refrigerating compressors. Mr. Todd explained the advantages of the different types of electric motor drives, their cost and applications. He touched on the various types of steam drive, and oil and gas drives too. Geo. A. Ingram, assistant engineer, Clover Farm Dairy, was elected to membership.

Alvis J. Clay, Chas. A. Conley and Cecil W. Sullivan, as delegates to the 43rd Annual Convention held at Dallas, Texas, gave a report on the convention. They told of the very fine educational papers that were given at the convention, the style in which they were handled and the very fine entertainment features of the convention.

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The members and officers of Tennessee Chapter voted the Dallas Chapter a vote of thanks for such a fine convention and the National Association for such a fine lot of educational papers.

The members and officers of Tennessee Chapter were very happy that Alvis J. Clay, one of its members, had been elected president of the National Association. Mr. Clay makes the fourth member of the chapter to be elected president of the National body. Tennessee chapter is the oldest chapter in the Association and has been an active chapter all through the years since the chapter was organized. The other presidents were James W. Marshall, James S. Spalding and Chas. A. Conley.

A business meeting and a general round table visit of the members was held Wednesday, December 3. The delegates to the Dallas convention had to give another account of convention goings on, as there were a lot of members present who weren't at the meeting when the report was made. The Chapter's instructor could not attend this meeting, and for this reason it was turned into a business and a general round table visiting meeting. The members have just about washed up the 1952 record, and say they are going in to win in every thing in 1953.

Detroit

L. L. ADAMS

THE combined annual Christmas meeting and ladies' night of the Detroit Chapter was held Thursday, December 18, 1952, at Carl's Hall, Gratiot and Holcomb, Detroit. It was a dinner meeting with refreshments being served at 6:30 and the other activities getting under way at a later hour.

There were numerous contests and prizes both for men and women. The feature of the evening was a motion picture in color of long haul motor freight operations. This picture, "Wheels of Progress," came through the courtesy of Pacific Inter-Mountain Express Company. Actual company employees were the actors. Viewing the picture took members and their wives on a trip through the west to some of the nation's most scenic and spectacular views; from San Francisco and Los Angeles on the West Coast to St. Louis and Chicago in the Midwest.

Dallas President Visits NAPRE Headquarters

TOM WEATHERFORD, JR., Dallas Chapter President, visited NAPRE headquarters in Chicago, enroute to Texas from the ASRE convention in New York. He also visited the Continental Freezers of Illinois Inc. and called on A. R. Carlson, Jr., Past President and Bert C. McKenna, Director, NAPRE.

Louisiana Chapter No. 2 Winner of Membership Trophy

THE winner of the Emerson Brandt Memorial Membership Trophy, was Louisiana Chapter No. 2, New Orleans, it was announced by Leroy Etzel, chairman of the Board of Directors of NAPRE. The award was decided on by the Board at their meeting immediately following the national convention at Dallas.

Following the recommendation of the membership chairman for 1952, Howard H. Peterson, the Board awarded the trophy on the basis of the showing by New Orleans of the greatest interest and effort for the association in the membership drive. New Orleans placed first in the point contest and second in the handicap percentage contest in membership.

ing the Guy King Refrigeration Course, New Orleans had no apologies to offer for the educational program this year.

Third, New Orleans provided social contacts. Aside from entertainment, the members and new prospects found that by their association with many outstanding refrigeration engineers they personally had entree to many plants; also through personal acquaintance, receive much assistance with their problems, as well as the prospect of a better position through these contacts.

Fourth objective was to interest management. We invited the owner or manager of various plants to our meetings. We picked meetings where the subject would be interesting and pertaining to his type of business. We tried to make him realize that the knowledge gained by his engineer benefits his operation.

Fifth, in addition to bringing the attention of the prospect, or the new member, to the value of the question box of ICE AND REFRIGERATION, we pointed out the many fine articles containing useful information which appear in that magazine, our official organ. It was further pointed out that our annual, the Operating Data Book, compiles the texts of all convention papers for him, as well as providing a buyers' directory.

Last, but not least, we strive to hold the members' interest. They must be instilled with enthusiasm for their association before they can interest others. To this end, the officers at all times strive to make each member feel that he is a vital part in the whole organization. It is New Orleans' attitude that maintenance of existing membership is as important as obtaining new ones.

As for the membership contest in New Orleans, some members, through their connections, were able to obtain more than others, and in order to reward each man who brought in a new member, his name was added to the list eligible for a prize. The following were awarded prizes: John Luck, J. Arena, F. Gillio, L. Vivien.

Members of the Chapter who donated the gifts were Al Lusch of the Reilly-Benton Company; George Whitman of Whitman, Holloway & Olivier; Chas. Green and M. Lewis of the Surgi Equipment Company; Chester Keating of the Standard Brass Company, and A. Fiegler of Enoch Sales Company.

In conclusion to the interview, Leo admonished, "You can talk about things with enthusiasm if you are familiar with them, and your sincerity, not salesmanship, will bring in that new member. Learn about your organization, NAPRE, and then you can sell it to a new prospect."

Officers of Louisina Chapter No. 2, New Orleans, who spearheaded a successful membership and chapter activities program, which won them the Emerson Brandt Memorial Trophy, and the membership trophy for the chapter acquiring the most new members with the greatest number of renewals.

Seated left to right: Frank Chase, Educational Chairman; Leo J. Vivien, Secretary; Milton Mancuso, 3rd V.P.; B. J. Mancuso, Pres.; J. Chaisson, 1st V.P.; Geo. Whitman, Treas.; Eugene Orth, Fin. Secy.

Standing: Louis Howat, Chairman of Board; J. Prager, Board Member; D. Fischer, Membership Chairman; Jos. Vernaci, Sgt.-at-Arms; W. Cook, Installing Officer; M. Oliver, Board Member; F. Gillis, Board Member; M. Sutherland, Board Member.

Absent: N. Forrest, 2nd V.P.; M. Bellinger, Board Member.

Leo J. Vivian, newly elected National First Vice-President, when interviewed with regard to the New Orleans method of handling membership drives, enumerated a number of activities which he felt contributed to their success:

First, according to Mr. Vivien, the appointment of a good Membership Chairman, who by his perfect attendance at meetings, and his willingness to work for the chapter unselfishly, can inspire others to do likewise. New Orleans had such a man in Damian Fischer.

Secondly, continued Leo, the chapter must present a consistently good educational program. It must be interesting to the majority and carefully planned. Frank Chase, our Educational Chairman, obtained good programs and with an expert like Professor A. M. Hill, of Tulane University, conduct-

Results of 1952 Chapter Membership Competition

Winners	Losers
Detroit	vs. San Francisco
Colton	vs. Stockon-Modesto
Tacoma	vs. Fresno
St. Louis	vs. Pittsburgh
Dallas	vs. Chicago
Memphis	vs. Seattle
San Jose*	vs. Twin Cities*
Tulsa, (Winner)	vs. Rio Grande Valley
Yakima, (Second)	
New Orlean	vs. Los Angeles
Sacramento* *	vs. Marion, Ill.* *

* Tied on points, but twin Cities Percent Winner.

* * No contest.

Note: Tulsa, Yakima and Rio Grande in a three way contest.

Mechanical Refrigerator Production in Canada

CANADIAN production of electric refrigerators continued to advance in August, according to the Bureau of Statistics. Declines in earlier months reduced the eight month production below last year's levels. Factory stocks dropped sharply at the end of August from a year earlier.

Output of domestic-type electric refrigerators in the month numbered 23,898 as compared with 17,232 in August last year. In the eight months ended August, 132,636 units were produced as against 229,502 a year earlier. Factory stocks were 8,922 against 30,245.

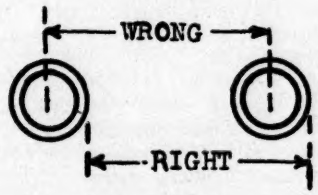
ENGINE ROOM POINTERS

Making a Drill Press Out of Brace and Bit

HAVE you ever drilled a hole through iron by means of an ordinary brace and bit? If you have, you know how tiresome it can become, principally because of the pressure you must constantly apply to make the drill take hold. Here is a handy kink—shown in the accompanying sketch—which makes the job easier. A threaded bolt, with a nut on it, is inserted into an ordinary pipe. The pipe must be small enough so that the nut will remain outside the pipe. There shouldn't be much "play" between the bolt and the inside of the pipe. Place a washer between the nut and pipe, if you have one, as it may make the work still easier. The end of the pipe is butted against a solid beam or other immovable object, as indicated. The drilling job is now accomplished by simply turning the nut as you operate the brace, thus forcing the treaded bolt against the brace. The pipe, of course, must be supported so that it will not spring out of place.

Best Way To Measure Center to Center

TIME and again this writer has seen mechanics measure center-to-center in the WRONG way, as indicated in the accompanying sketch. If the distance is 8 inches, center-to-center of two pipes, for example, the exact center of each pipe will be laboriously located, and then the distance center-to-center will be measured in the manner as shown WRONG in the sketch.

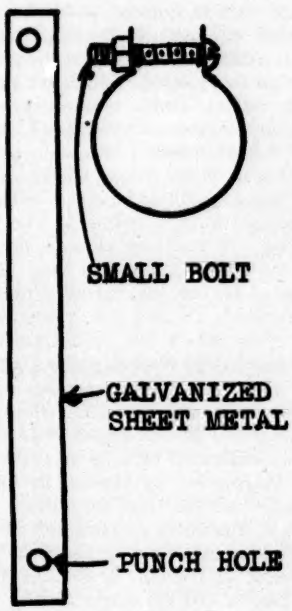


Give the matter a moment's thought and you will see that the RIGHT way is to measure from side to side as indicated by the word RIGHT. The distance is precisely the same as the center-to-center distance, and it is much more easily and accurately measured.

To be sure if the pipes, rods, pulleys, sheaves, etc., are different in diameter, then this method does not hold. The best way, then, is to do some figuring. Determine the correct distance when measured RIGHT. Even then the center-to-center method marked WRONG is more difficult than the RIGHT method—F.S.W.

How To Make a Hose Clamp

EVER find yourself in need of a hose clamp and no time to go to the store for a new one? This writer has been in that predicament a number of times and he "got out of it" by making his own in a hurry as shown by the accompanying sketches. Take a piece of galvanized sheet metal of suitable length and width—which you can

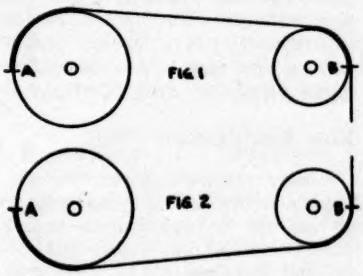


quickly cut out with a pair of snips—and punch holes through the ends—with a nail if you have no drill press. Then wrap around the hose, bend the ends for the small bolt, insert the bolt, tighten it up with a screwdriver, and you are again ready to go ahead with your work. To be sure a clamp like this is not equal in quality to those that are obtainable in dime stores, but some that this writer made several years ago are still doing their jobs well.—W.F.S.

Circumference Measuring

THE quickest way to measure the exact distance around two pulleys when measuring for a belt, band saw, rope, cable, etc, is shown in this diagram below.

Very often a steel tape is not long enough to reach around. And even if the tape does reach clear around it often is a cumbersome method on account of obstructions and the necessity of running back and forth with the tape. Using this method, if the tape isn't long enough, that makes no difference.



This is really a "two man job." One man makes a mark on his pulley at A and the other makes a mark on his pulley at B. Measure the distance around the tops of the pulleys from A to B as shown in Fig. 1. Then measure the distance around the bottoms of the pulleys from A to B as shown in Fig. 2. Add the two measurements and you have the exact distance around the pulleys.

Of course the end of the tape is held precisely at A in making both measurements. The readings are taken and added at B. It is obvious that this method is particularly valuable where it is desired to know the exact lengths of belts on a long line shaft. The two men can proceed from one end of the shaft to the other in an orderly and efficient manner without any running back and forth with the end of the steel tape. With this method there are seldom any obstructions.

Refrigeration Increases Dressed Meat Trade in Ireland

THE dressed meat trade in Ireland which has shown remarkable growth aided by a new refrigeration system is proving of real benefit to the Irish economy according to George Shera, Canada's acting Commercial Secretary in Dublin. He says in the Canadian Government's publication "Foreign Trade" that a new refrigeration system evolved by the Irish Fresh Meat Exporters' Committee of Dublin, will make possible an all-year-round export trade in meat, chiefly to the United Kingdom. It is expected that the 4.636 long tons of frozen meat shipped to the United Kingdom between January and July of this year will be replaced by almost double that amount of new chilled meat within the next six months. And nearly 10 thousand long tons may be marketed before 1953.

By the new method the meat is chilled in refrigeration depots, taken to the dockside in huge insulated containers, and put into the ship's special refrigerators by means of insulated trolleys carried on a conveyor belt. Unloading is carried out in the same way, and handling of the meat reduced to a minimum. Already two experimental lots of chilled beef of 25 long tons each have gone to New York, where they graded well.

New Refrigeration Plant

A new refrigeration factory, Refrigorifico Limited is being built to process the heavier shipments and when completed will employ 400 people the year-round. A Cork firm, Messrs. Lunham Bros., whose bacon factory was lately re-equipped as a chilled and canned meat plant, recently sent its first shipment of 250 chilled beef quarters to the United Kingdom under the improved chilling system. Two shipments are to go each Monday and Friday and the first shipment of frozen boxed beef cuts to the United States will leave in the near future. This factory is absorbing about 1,000 head of cattle a week.

Another new dressed meat factory, operated by Irish Meat Packers, Ltd., has been established at Barnhall, Leixlip, County Kildare, and is sending chilled beef to the United States Air Force in Britain. This factory also specializes in the canning and processing of by-products. At present about 120 workers are employed and that number may rise to 150, when output will be almost doubled. Between 400 and 500 cattle are slaughtered each week and this number will probably increase to 800 before the end of the year. Four large refrigeration rooms, a 100-ton store, and a modern offal-processing plant will shortly be added. A regular supply of cattle is insured because the 165 acres around the factory will make it possible to keep a substantial reserve of stock on grass. Stewed steak and canned tongues will be among the products when the factory is working at full capacity.

All this indicates how the Republic of Ireland is gradually switching over from uneconomic "on the hoof" exports to the trade in dressed and processed meat. The change began about two years ago with experimental shipments of frozen or chilled meat to the United States. Since then, the trade has developed rapidly and markets have been found in the United Kingdom and on the Continent. In 1951, exports of dressed meat are said to have reached $10,600,000 and in the first seven months of this year, $8,500,000.

Exports Increased

In the past few years, the export of fresh and chilled meat to the United Kingdom has increased considerably. For the 12 months ending June 1952, exports of fresh and chilled beef to Great Britain reached 20,600,000 lbs. valued at about $4,200,000. Frozen beef exports amounted to nearly 2 million lbs. valued at $765,000. Fresh and chilled lamb exports to the United Kingdom amounted to $2,500,000 lbs. $676,000; fresh and chilled mutton to 20,000 lbs. at $5,500.

Fresh and chilled beef is now being consigned to the Continent. The following are the approximate figures for the period January to June, 1952: France, 855,000 lbs., value $233,000; Netherlands, 221,000 lbs., value $56,000; Italy, 69,000 lbs., value $15,500; Switzerland, 29,000 lbs., value $11,000.

This growth in the processed meat trade has had a beneficial effect on employment in the Republic of Ireland. Additional labor is also needed for slaughtering, processing the offal, sausage-making, the production of leather, glandular extracts and blood and bonemeal. Existing plants in the Republic of Ireland, it is estimated, can handle 200,000 cattle a year.

The expansion of the dressed meat trade reduces the cattle industry's dependence on the United Kingdom, because under the 1948 Anglo-Irish Trade Agreement the Republic is bound to send 90 per cent of her exports of live cattle to the United Kingdom. This agreement will probably be revised in the near future and officials are already conducting preliminary talks. A reduction of this quota would give Ireland a better trading position. Under the agreement the United Kingdom was bound to accept imports of carcass beef at the rate of not more than 200 tons per week, with an annual limit of 4000 tons. This situation is also likely to be reviewed because of the remarkable growth in the Republic's dressed meat trade.

Chicago Section, A.S.R.E.

THE regular November meeting of the Chicago Section of the American Society of Refrigerating Engineers included an inspection trip through the Technological Institute of Northwestern University. The trip was made possible through Professor B. H. Jennings.

The group was divided up into groups of 25 so that each member would have an opportunity to ask questions and note the various activities.

The trip included inspection of the mechanical, chemical, electrical and civil engineering divisions in operation. There were several new projects of great interest that were pointed out. These projects included the Hilsch Hot and Cold Tube, Electronic net work analyzers, computers and other devices. It was pointed out to the group how each one of these devices or analyzers could be used in the practical world. The soil mechanics laboratory demonstrated soil tests with sand showing how they could be related to foundation load bearing results.

A demonstration showing methods of determining noise and its control in piping systems was thoroughly reviewed, as well as the Schlieren and shadow theory which showed a method of making shock waves and heat waves visible to the eye.

A fatigue machine for determining stress on riveted and bolted connections was thoroughly outlined to the various groups and it has been concluded to date that a riveted joint is superior to a bolted joint.

A low temperature room carried at minus 80F was shown with the various types of equipment in operation to maintain these temperatures. The equipment was 2-stage, with Freon as the refrigerant.

An interesting demonstration was held showing short circuiting that could result from improper protection devices at high voltages, which would assimilate lightning charge.

FrozenFoods

*Reg. U.S. Pat. Off.

PREPARATION PACKAGING FREEZING STORAGE DISTRIBUTION DESIGN CONSTRUCTION EQUIPMENT

Frozen Foods Convention Attracts Wide Interest

THE industry's response to the announcement of the 1953 National Frozen Foods Convention has been extremely gratifying, according to C. L. Snavely, president of the National Association of Frozen Food Packers, and Chairman of the 1953 Convention Committee. Applications for room reservations and advance registrations have been pouring into the Committee's Washington headquarters.

With the lively interest evidenced, this National Convention, scheduled for Chicago, March 1-4, 1953, promises to be another outstanding conclave of frozen food executives, including packers, distributors, brokers, warehousemen, suppliers and allied interests. Invitations to attend the convention have been extended by Mr. Snavely to all interested companies, and forms for advance registration and room reservations have been furnished. As in past years, all room reservations are being handled by the Convention Committee.

Frozen Food Convention Not With Exposition

THE National Frozen Foods convention scheduled for Chicago March 1-4, 1953 has no connection with a trade exposition called the National Frozen Food Industries Exposition, which is being sponsored by an exposition management company, and is not a part of the annual National Frozen Foods Convention.

This announcement has been made by C. L. Snavely, president of the National Association of Frozen Food Packers and Chairman of the 1953 National Frozen Food Convention Committee. This committee is composed of representatives of leading national food trade associations which each year sponsor the National Frozen Foods Convention. The national associations participating in the Chicago convention are: National Association of Frozen Food Packers, National Wholesale Frozen Food Distributors, Inc., National Food Brokers Association, National Association of Refrigerated Warehouses.

Grade Standards for Frozen Mixed Vegetables

THE U. S. Department of Agriculture has announced the establishment of U. S. Standards for grades of frozen mixed vegetables to become effective December 4, 1952.

The new grade standards include recommendations for a mixture of three, four, or five of the following vegetables: Cut green or wax beans, lima beans, diced carrots, golden whole kernel corn, and early type or sweet type peas. In a mixture of three vegetables, each constitutes at least 20 percent of the mixture.

In a mixture of four vegetables, a single vegetable constitutes at least 8 percent of the weight and none of the other three vegetables constitutes more than 35 percent. In a mixture of five vegetables, a single vegetable constitutes at least eight percent of the weight and none of the other four vegetables constitutes more than 30 percent. Small pieces of vegetables for garnishing purposes are permitted.

The standards provide for two grades—U. S. Grade A (or Fancy) and U. S. Grade B (or Extra Standard)—above Substandard. Scoring factors include color, defects, and character. Some of the requirements including flavor and odor are based on the individual vegetables, as well as on the entire mixture, both before or after cooking.

The action follows consideration of views and comments of interested persons in response to an announcement of proposed standards by the Department of Agriculture last May.

Frozen Cherry Pack Down

THE 1952 pack of Frozen R.S.P. Cherries amounted to 61,797,560 pounds, according to a preliminary tabulation by the National Association of Frozen Food Packers. The 1952 pack was down 38 percent from 1951 and was smaller than the pack for any year since 1945. The pack in all regions declined shaply. The volume packed in retail containers this year was greater than in recent years, but all other container size classifications shared in the general decline.

Frozen Food Distributor Opens Storage Warehouse

CARPEL, Inc., a distributor of frozen foods, recently opened a new frozen food warehouse in Baltimore. In the announcement, Charles J. MacGarvy, president, said: "Our reasons for expansion at this new location was in recognition of the fact that people whose merchandise we distribute in this area would be helped if there was frozen food storage available under the control of the distributor. This is a new concept in semi-public storage; it will be operating in conjunction with the American Express Corporation which will be responsible for issuance of warehouse receipts. I have been advised by the American Express Corporation that this is a unique operation and will undoubtedly be copied by other distributors in other localities. On the whole, I believe we have a unique operation — one that to my knowledge has never been done before."

Frozen Foods in California

THE Research Department of the California State Department of Commerce has proposed a mimeographed report of its study of the frozen-food industry in the Golden State. Prospects for various kinds of frozen foods are discussed and Directories of packers and cold storage warehouses are included. The summary states that California's portion of the nation's pack of frozen fruits and vegetables will probably continue to increase and all indications point to a greater demand for frozen poultry and fishery products. —TRRF Information Bulletin.

Frozen Whale Meat

FROZEN Whale Meat is now being introduced for the first time in markets east of the Mississippi River. A team of 15 food brokers is handling the deal, according to reports. It will be retailed in one pound sizes and also made available to institutional outlets. Experiments with this product have been conducted for the past 18 months, with institutional tests having been made for the past two months.—Cold Facts.

Versatile and Comprehensive Program is Offered by A.S.R.E. at Annual Meeting

A VERSATILE and comprehensive program of technical and refrigerating subjects was presented at the annual meeting of The American Society of Refrigerating Engineers, held at the Hotel Commodore, New York City, November 30 to December 3. Trends in defrosting methods, design and development, trends in room air conditioners and refrigerators and other technical developments came in for considerable discussion.

For the best paper presented at a section meeting an award was granted to Elwin B. Newton of Acme Industries Inc., for a paper on "Application and Control of Shell and Tube Water Cooled Equipment."

An award for the largest percentage increase in paid-up memberships over the past years was granted to the Indianapolis section.

Room Air Conditioners

At a conference on room air conditioners C. C. Fitzsimmons of Underwriters Laboratory Inc., pointed out the problems and dangers in using room conditioners larger than one-half hp on 115 volt power lines. This statement was made in connection with an outline of the new Underwriters Laboratory Standards for air conditioning equipment.

Another interesting part of this conference was discussion of additional features and functions that are available in room air conditioners.

According to W. L. McGrath., Carrier Corp., improper damper arrangements or incorrect designing can often bring about quite undesirable results in providing fresh air or exhaustion of room air. This, he said, can happen in tall buildings where stack effect of wind velocities may effect ventilating phase operation of a room air conditioner on the lower floors of a tall building. In the exhaust air function the reverse may happen where the dampering or design is improper in that it will work all right on the upper floors but not on the lower floors.

The tendancy to include heating with room air conditioners is being accomplished in many cases with strip heaters and also there are some experiments being made with heat pump room air conditioners, and in one case it was reported that the contractor is converting ordinary room air conditioners to heat pump style units. In connection with strip heaters it was pointed out that it would be necessary not to put in more strip heater capacity than the amount of amperage which the compressor draws on the power line and to provide a control that will not permit operation of both the heater and the compressor at the same time, or of the heater alone without the blower being on.

It was pointed out by J. R. Hartman, Chairman of the Commercial Section of Edison Electric Institute that utility companies will be much more interested in promoting the room air conditioner if it has a heating function. The heating load would give the utility companies a more satisfactory power load. To illustrate he pointed out with chart how a room air conditioner could be used the year around in many parts of the country if it provided both functions.

Household Refrigerators

According to Walter M. Timmerman, general manager, Household Refrigeration Department of the General Electric Company, if an industry volume of four million or more mechanical refrigerators are to be maintained the industry must provide engineering to not only sell refrigerators to the remaining families which do not now have them and to all new families, but also to persuade users to purchase a new refrigerator every 12 years. He said the industry cannot count on refrigerator failures or depreciated performance to provide the replacement volume needed. Instead they must have a continuous flow of new features to give the housewife so much greater value in convenience, performance, appearance and capacity that she will be very unhappy with her 12-year old refrigerator even though it may be performing about as well as when it was new.

The General Electric Company, Mr. Timmerman explained, has established a system under which each department is responsible for its own product planning and development.

An interesting discussion of the possible household refrigerator of the future which would include a drawer type freezer compartment in the bottom, split doors, multiple effect or staging type of condensing unit and a combined automatic ice maker and cold water dispenser, was presented by Glenn Muffly. Mr. Muffly also said that new trends in houses of the ranch type where visitors and guests can see all the way through to the kitchen will encourage the purchase of newer, more modern refrigerators.

Convention Notes

An innovation at ASRE convention was a display of some 15 or more non-commercial technical research exhibits of processes employed in the refrigeration industry. Among these were the effects of atomic irradiation on food, demonstration of a vapor seal, and 15 original U. S. patent models of refrigeration equipment submitted to the patent office prior to 1880.

Recognizing the importance of the subject of defrosting, the opening technical session was devoted to a symposium on various methods of commercial and industrial defrosting at which five speakers described briefly defrosting by air, water, hot gas, infra-red and dehumidification.

Departing from strictly engineering topics, the program committee arranged for one General Session, to be devoted to a look into the future of the industry and how to prepare for what may be expected.

Of particular interest to the appliance or packaged unit engineer and salesman was a general discussion of the history and importance of functional design, new materials and finishes, trends and colors, held at the domestic refrigerator engineering conference Tuesday afternoon, and presided over by Walter Teague. well known industrial designer.

For the first time in engineering history, there was held a symposium on air conditioning passenger automobiles and coaches, participated in by representatives of five leading automobile and equipment manufacturers.

The final technical session was devoted to the presentation of five papers on cooling, freezing, storage and transportation of food products. Conferences were also held on product planning for room air conditioners and installation of cold storage insulations.

New Officers Elected

New offices for 1953 were elected as follows.

President, R. C. Jordan, Minneapolis, Minn.

Vice-presidents: Arthur J. Hess, Los Angeles, Calif.; Leon Buehler, Chicago, Ill.

Treasurer, Carlisle Ashley, Syracuse, N. Y.

The Ice Industry Review

(Continued from page 27)

trade, increasing efforts of distributors to make ice more easily available to customers, forgetting the "war years" and working toward making a profit out of the tonnage available.

A Canadian report is to the effect that the sales outlook for 1953 is satisfactory, but the industry is still faced with the problem of rising costs.

According to a Georgia company, the preliminary industry tonnage figures indicate that on a nation-wide basis, the ice business has leveled off although it has continued to decline in that territory. They have sufficient confidence in their ability to merchandise their ice to feel that possibly they, too, have reached a turning point, and through a closer control of costs and increase in sales, definitely look for more profit out of the ice business in 1953.

An Indiana distributor thinks the industry has passed the low ebb in sales and is now on a firmer basis after having adjusted to loss of the bulk of domestic sales. With normal weather he thinks their 1953 sales will show an increase in dollar volume.

An Illinois, as well as other operators, think the season of 1953 will depend largely upon the weather.

An Eastern distributor offers as his opinion that the outlook in his territory does not look any better than in 1952.

The outlook for 1953 according to a Missouri distributor is about the same as last year assuming that they have the same temperature, less the inroads that electric refrigeration may make. This competition has been fairly rough the last few years.

A New York operator says that while domestic sales continue to decline the industry is holding onto and increasing its commercial trade, and this is offered as an encouraging aspect that will affect the future.

An Ohio company is very encouraged about the future of the ice business in their locality and they definitely can say that their ice plant is not for sale.

In Oregon an optimistic distributor says he thinks 1953 will be a better year than 1952, just as 1952 was a better year than 1951.

Another Oregon distributor comments briefly that the outlook for 1953 is "apparently good."

A less favorable report comes from Tennessee to the effect that with the increased use of mechanical refrigeration, both for commercial and domestic, and with the smaller fruit and vegetable crops and more movement of same by truck rather than by rail, the outlook for the ice business in their territory is not too promising. They expect the trend to continue downward from year to year.

But another Tennessee operator feels that the outlook for next year is good for those individuals who are willing to forget "War years" and work toward extracting a profit from the tonnage currently available.

Miscellaneous Comments

MISCELLANEOUS comments offered by a number of ice distributors, not included in the above resume, but having a bearing on the complete picture include the following:

A Canadian distributor reports that before the year was fairly under way an upsurge of selling of mechanical refrigerators inundated the market. Purchasing was induced by the fear of impending shortage, as happened in a previous period, but which did not materialize. Instead stocks accumulated and forced selling was resorted to by the appliance dealers and furniture stores, offering $100 for a used "ice-box." Such panic selling did not benefit the local dealer, as profits went down and sales could not be sustained. The damage was done however so far as refrigerators were concerned and sales have slowed up. Nevertheless they believe there is an attractive field for a low priced ice refrigerator of good quality and design if persistently promoted in the proper area, and by direct contact with the householder.

A New York distributor says the home ice maker hasn't been very popular in their territory. Many owners still buy some ice and no distinction is made as to price. Their price schedule is of the utility type. The more they buy at a delivery the lower the rate.

ASH & VE Exposition Will Feature Air Conditioning

MANY industrial as well as domestic and commercial applications of heating and air conditioning will be featured at the 11th International Heating and Ventilating Exposition in Chicago, January 26-30. The event, which will have more than three hundred exhibits, will be staged at the International Amphitheatre, under the auspices of the American Society of Heating and Ventilating Engineers.

Most of the displays into which the pattern of the exposition falls, includes a substantial proportion of equipment items of industry-wide interest.

New Plants and Improvements

Chicago, Ill.—The Oakland Meat Company, wholesale and process firm is building a new one story plant at 3823-27 South Halsted Street to cost $115,000.00.

Everett, Wash.—The American Ice & Cold Storage Co., Everett, Wash., plans to build a two-story warehouse on its property but needs additional space, requiring a part of Nassau Ave. north of California for a railroad spur and a loading platform. The city has been asked to vacate a part of the dead-end avenue.

Mt. Vernon, Wash. — Pict Sweet Foods, Inc., has announced that it will add freezing equipment to the canning facilities of its plant at Mt. Vernon. Two up-to-date freezing tunnels will be installed.

Seattle, Wash.—A new three-story cold storage plant has been erected exclusively for fish at the Spokane Street Terminal. The new plant, covering 147 x 100 feet, though not quite completed, has been placed in active operation. First floor, along the waterfront of Seattle, has four well-equipped refrigerated rooms, of large dimensions, a refrigerated corridor, and a fish-handling house.

Sales and Reorganization

Jamestown, N. Y.—The property of the New Ice and Coal Company and the Northern Cold Storage Fur Vaults has been sold to Peter C. Bendo, 838 North Main Street. Mr. Bendo will continue to operate the fur vaults. Endress Ice and Coal Company has purchased the ice and coal equipment including its coal inventory. The New Ice and Coal Company was incorporated in May 1922 and the Northern Cold Storage Fur Vaults in 1927.

Spokane, Wash. — The Hazelwood Cold Storage Co. has been purchased by Martin L. Williams, who until recently was western traffic manager for the Birds Eye division of the General Foods Corporation, with headquarters at Hillsboro, Ore.

New Incorporations

Kings, N. Y.—Frigid-Pak Corporation, food freezers of all kinds, has been granted charter of incorporation, listing capital stock of 200 shares no par value. Directors are Solomon Diamond, Wm. Houslanger and Meyer Wiener.

Milwaukee, Wis. — Jackl's Cold Storage Co., Inc., has been formed with a capital stock of 1,000 shares of common of no par value. Incorporation papers were signed by William Jackl, with office at 4200 W. Kichnau Ave.

Icy Items

Houston, Tex.—The Houston Central Warehouse and Cold Storage Co. has filed articles with the Secretary of State, increasing its capital stock from $60,000 to $90,000.

Air Conditioning Units For Small Homes

FOR the first time, year-round air conditioning is to be made generally available in homes in the $7,000 to $12,000 price range, it has been announced jointly by Gen. John J. O'Brien, president of Gunnison Homes, Inc., U. S. Steel's housing subsidiary, and Cloud Wampler, president of Carrier Corporation. These two companies have signed a contract under which Carrier, air conditioning firm, will provide combination cooling and heating units to Gunnison Homes as optional equipment in all of its models to be produced and marketed in 1953.

In entering into this contract with Carrier, Gunnison Homes becomes the first of the nation's prefabricated home manufacturers to provide year-round air conditioning for its home purchasers. The company next year will offer the cooling and heating units in any of its models through its nation-wide organization of 350 dealers.

"This contract," declared Mr. Wampler, "marks a truly revolutionary development in the current upsurging interest in residential air conditioning. It brings it to the mass home market and we expect this initial contract to be increased by many times prior to next summer's building season."

CONVENTION CALENDAR

MISSOURI VALLEY ICE MANUFACTURERS' ASSOCIATION
January 12-13, 1953
Hotel President, Kansas City, Mo.
V. R. ESPHORST, Secy-Treas.

OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
January 18-20, 1953
Mayo Hotel, Tulsa, Okla.
HARRY T. HUDSON, Exec-Secy.

FACT FINDING CONFERENCE
February 14-17, 1953.
Kansas City, Mo.
CLIFF D. CARPENTER, President

GEORGIA ICE MANUFACTURERS ASSOCIATION
February 24-25, 1953
Ansley Hotel, Atlanta, Ga.
RICHARD H. FLORRID, Secretary

SOUTHERN ICE EXCHANGE
February 24-25, 1953
Ansley Hotel, Atlanta, Ga.
RICHARD H. FLORRID, Secretary

ALL-INDUSTRY FROZEN FOODS CONVENTION
March 1-4, 1953
Conrad Hilton Hotel, Chicago, Ill.

NORTH CAROLINA ICE ASSOCIATION
March 9-10, 1953
Robt. E. Lee Hotel, Winston Salem, N. C.
LEWIS POWELL, Secretary

NORTHWEST ASSOCIATION OF ICE INDUSTRIES
March 25-27, 1953
Empress Hotel, Victoria, B. C.
L. F. MARSH, Exec-Secy.

KANSAS ASSOCIATION OF ICE INDUSTRIES
January 12-13, 1953
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MATT SCHERER, SR., Secretary

NATIONAL ASSOCIATION REFRIGERATED WAREHOUSES
May 17-21, 1953
Shoreham Hotel, Washington, D. C.
WM. DALTON, Exec. Vice-Pres.

AMERICAN WAREHOUSEMEN'S ASSOCIATION
May 17-21, 1953
Shoreham Hotel, Washington, D. C.
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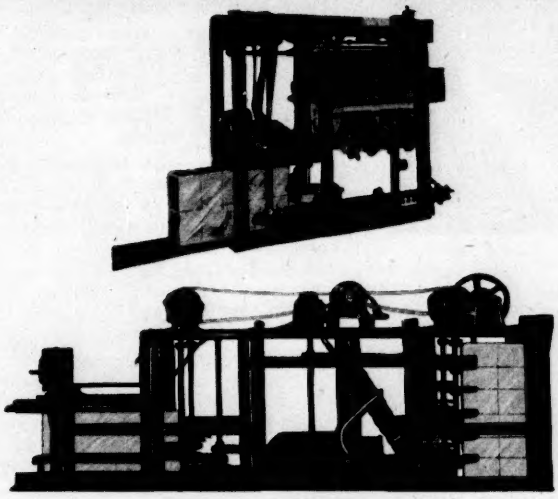

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PERFECTION SPECIAL

The PERFECTION SPECIAL receives ice blocks on edge, scores them lengthwise first. Then heads up the blocks, scores them crosswise and discharges them standing on end. This is a combined heading and scoring machine and scores the blocks into any size pieces desired in one complete operation. Capacity is 4½ blocks per minute or 270 blocks per hour.

QUICK DELIVERY!

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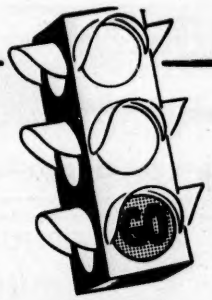
TRAFFIC NEVER STOPS



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Easy to apply—sets instantly—long wearing for year around use indoors or out—WILL NOT FREEZE—can be stored indefinitely and used in any temperature—lowers maintenance costs amazingly.

Here's all you do: Clean hole in any type floor, spread primer supplied in drum, fill in with PERMAMIX, tamp and dust with cement or floor dust, resume traffic immediately. It's that easy, for PERMAMIX feather edges and no cutting or chipping is required. No skilled labor is necessary, you need no special equipment, you have no mixing, waiting or production delays when you repair or patch your floors the easy, fast PERMAMIX way. Comes in handy, durable 50 lb. net weight drums.

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MAINTENANCE!

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the Pipe Insulation that

LASTS INDEFINITELY*

CHEAP AND EASY TO INSTALL

● lightweight ● moisture-proof . . . no swelling, softening or freezing ● efficient . . . K factor of .23 to .27 ● sanitary . . . no rot, drip or mold ● odorless and non-toxic ● vermin-resistant

Vapo-Wall pipe insulation, made of Styrofoam, is immediately available in all common sizes of pipe and fitting covers. Shipped with all necessary installation tools. Can be installed with good results, even on wet lines, by inexperienced personnel. Write for free booklet and price information.

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DEATHS

Nolan S. Von Phul

THE death of Nolan S. Von Phul, chairman of the Board of the Scobey Fireproof Storage Co., San Antonio, Texas, occurred November 15 at the age of 78. He had been associated with the Scobey organization since 1929.

Mr. Von Phul was a graduate of the school of engineering of Tulane University, and captain of the first Tulane football team. After graduation he was employed by the United States corps of engineers. As a consulting engineer he visited Mexico, where he became active in the oil industry.

In 1927 he returned to the United States and became a resident of San Antonio, where he took an active part in civic, business and social activities. Since 1929 he was associated with the Scobey Fireproof Storage Company, serving first as president and later as chairman of the board.

He was a member of Kappa Alpha Fraternity, The Louisiana Society of the Sons of the American Revolution, The Tulane "T" Club, The San Antonio Country Club, The German Club of San Antonio, The San Antonio Kiwanis Club, The Boston Club of New Orleans, of which his father was a Charter Member, and the National Association of Refrigerated Warehouses. During World War II he served as a civilian refrigeration consultant to the Secretary of War.

Nolan S. Von Phul

He is survived by his widow, the former Helene Mc Gowan of New York, whom he married in 1925, and their son, James Bruce Von Phul, now a student at Tulane.

JOSEPH CAVE, former president of the old Cave Ice Manufacturing Co., Philadelphia, Pa., died November 27. He was 83. He is survived by two daughters and one son, all of Philadelphia.

Martin Larsen

As announced in the December ICE AND REFRIGERATION, Martin Larsen, general manager and director of The Atlantic States Warehouse & Cold Storage Corp., Springfield, Mass. died November 3. He was 58.

Mr. Larsen's other business connections were as director of the Massachusetts Cities Realty Co., and chairman of the warehouse and storage division of the New England Shippers Advisory Board.

He was a past president of the Wilbraham County Club, a past lieutenant governor of the New England district of Kiwanis International, and secretary and treasurer of the Bircham Fly Club, Inc. He was a member of the American Society of Refrigerating Engineers, Kiwanis Club, and Springfield Country Club.

Before coming to Springfield in 1928, he was engaged in electrical work in Providence, R. I., Worcester and Lowell. He was a graduate of Worcester Polytechnic Institute and his early education was in Providence schools.

He leaves his widow, Mrs. Ivy Larsen, two sons and five daughters.

MICHAEL J. GANNUCCI operator of an ice and coal business in Jersey City, N. J., died December 2. He was 52. He is survived by his widow, Mrs. Vita Causa Gannucci.

VIM SERV-ICE Products
ICE TOOLS AND SUPPLIES

WE CONTINUE YEAR AFTER YEAR
to make the kind of Ice Picks that will give YOUR customers satisfaction and build up GOOD WILL FOR YOU.

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on Suction Line Accumulator

Ammonia pump is controlled by MS Float Switch installed on compressor room accumulator. "Picture window" on MS Float Switch shows ammonia at operating level, permitting rapid trouble diagnosis. Switch operates on new magnetic principle. All parts enclosed in water proof transparent housing. Hundreds of Mojonnier MS Switches are operating under wet and other adverse conditions. Write for Bulletin 243.

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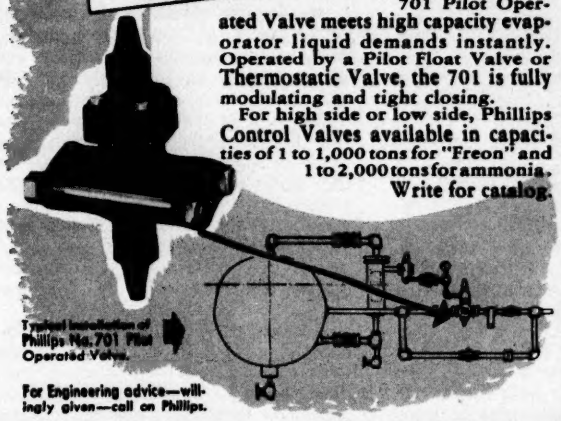
Mojonnier MS FLOAT SWITCH

REFRIGERANT
SUPPLY MEETS DEMANDS...
Automatically
with **PHILLIPS** FLOAT CONTROLS
PILOT OPERATED LIQUID CONTROL VALVES

The Phillips No. 701 Pilot Operated Valve meets high capacity evaporator liquid demands instantly. Operated by a Pilot Float Valve or Thermostatic Valve, the 701 is fully modulating and tight closing.

For high side or low side, Phillips Control Valves available in capacities of 1 to 1,000 tons for "Freon" and 1 to 2,000 tons for ammonia. Write for catalog.



Typical installation of Phillips No. 701 Pilot Operated Valve.

For Engineering advice—willingly given—call on Phillips.

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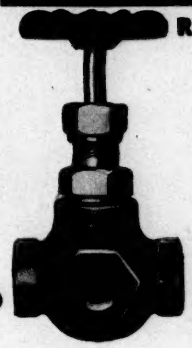


3-WAY DUAL SHUT-OFF VALVE

For use where Refrigeration Codes require dual relief valve installations. Stainless steel stem. Indicator plate on hand wheel shows position of valve shut off. Completely rustproofed.

RELIEF VALVES

For Ammonia and Freon. One piece body design—rustproof finish. Internal construction—stainless steel—will not corrode. Positive relief action. Pressures from 75 to 400 lbs.

See your jobber—or write us for prices.

CYRUS SHANK CO.
629 W. Jackson Blvd. Chicago 6, Ill.

FAST, ECONOMICAL CRUSHER SAVES TIME, LABOR COST!

The new and fast-operating "Little Chief" Ice Crusher by Bateman has three grate adjustments and will grind a 25-pound block of ice into fine ice in 12 seconds; into medium ice in 8 seconds, and into coarse ice in only six seconds.

It holds snow to an absolute minimum, is galvanized and has a chute for filling bags. It is simple—and dependable. There are no gears since drive is direct from two-groove flywheel.

Because of high grinding speed, the "Little Chief" operates from a ¾ H.P. motor. If desired, motor will be provided at prevailing price.

ONLY
$149.00
Less Motor
FOB Mineral Wells

Bateman Ice Processing Equipment
Write For Details
Mineral Wells, Texas

Your Assurance of Best Quality
REFRIGERATION COILS
made by The National
PIPE BENDING COMPANY

All features that you demand are furnished regularly in National Pipe Bending Refrigeration coils—smooth bends, perfect welds, measurements exact.

Pipe Bending Co.
New Haven, Conn.
162 River St., New Haven, Conn.

August E. Muller

THE death of August E. Muller of Cincinnati, Ohio, former vice-president of the old Citizens Artificial Ice Company, occurred November 23. He was 64. In 1917 Mr. Muller helped establish the Citizens Artificial Ice Company and was its vice-president when it was sold in 1945. At that time he became road dispatcher for the Cincinnati Automobile Club, a position he held until ill health forced retirement a year and a half ago. He was a member of the Fraternal Order of Eagles. He is survived by a daughter.

WILLIS H. KEMP, 64 years old, who had been office manager, secretary and treasurer of the Wilderman Refrigeration Co., Seattle, for some 15 years, died recently in that city as he was being transported in an ambulance to King County Hospital. Born in Junction City, Kansas, he had lived in Seattle 36 years.

HARVEY W. PULLEN, Arcola, Ill., who operated an ice house in Arcola for many years, died December 3. He was 70. Mr. Pullen was a prominent resident of Arcola for many years and took an active interest in civic and community affairs.

Leland Stanford Eckert

THE death of Leland Stanford Eckert, president and founder of the Eckert Engineering Corporation, San Francisco, occurred December 2, following a long illness. He was 53.

A pioneer in refrigeration engineering Mr. Eckert founded this company 16 years ago and put in many refrigeration systems for large breweries. He was a member of the Master Brewers Association of America, Civil and Professional Engineers of America, Olympic Club and the Lakeside Country Club. He is survived by his widow, Mrs. Wilma J. Eckert and two sons.

DR. ALEXIS A. BERESTNEFF, refrigeration engineer at Carrier Corporation Syracuse, N. Y. since 1935, died December 1 after a short illness. Dr. Berestneff formerly was a consulting engineer in the bureau of heating in Berlin. He came to this country in 1929. At Carrier he was a director of the development specializing in absorption refrigeration machines.

SAMUEL PEER, Denville, N. J., died November 22 after a long illness. He was 79. A lifelong resident of Denville, Mr. Peer retired 20 years ago from management of an ice business. He is survived by two daughters.

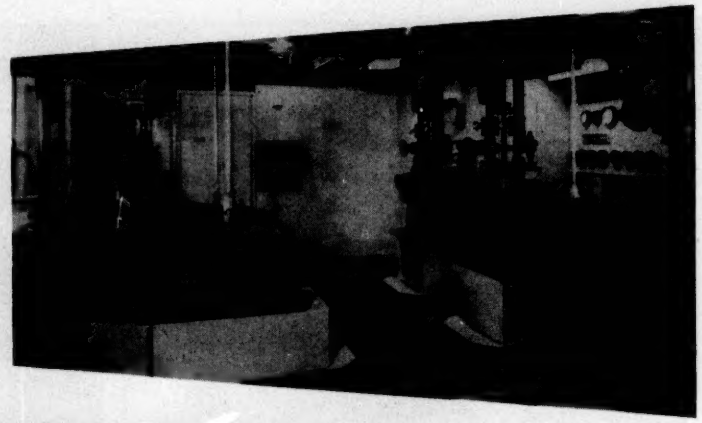
CLARK W. BROOKS, Kansas City, Mo., who had operated coal and ice companies in the eastern part of Kansas nearly 50 years before he retired last year, died November 18. He was 74. About 5 years ago he merged the Brooks Coal and Ice Company and the Home Coal Lumber & Roofing Company, continuing operation as the Brooks Home Coal & Lumber Company at the latter location. He is survived by his widow, Mrs. Maude Brooks and a son, Col. Clyde Brooks, Air Force, Panama.

MAURICE H. BIVENS, Longview, La., co-owner of the Longview Ice Company and associated with cotton and oil companies died recently. He was 65. Mr. Bivens was a graduate of Texas A & M college, where he was prominent in athletics and campus organizations. He was a member of the Rotary Club, president of the Longview Chamber of Commerce, member of the First Methodist church and a former member of the school board, also prominent in Masonic circles. He is survived by two sons.

CHARLES B. WINN, a retired Philadelphia ice dealer, who lived at 909 Central Ave., North Wildwood, Pa., died November 4, in Burdette Tomlin Memorial Hospital, Cape May Court House. He was 69. He is survived by his widow, Mrs. Laura Winn, and a son, Charles, Jr.

Multiply Refrigeration Efficiency

by ÷ Dividing the Refrigeration Load with a CP BOOSTER SYSTEM



CP Booster System at storage plant of Golden State Co. Ltd., in San Francisco provides efficient refrigeration for 10 huge freezer and chill rooms.

Actually Holds Temperatures as Low as -60 F. with LESS HORSEPOWER LESS SPACE LESS WEAR LESS MAINTENANCE

Wherever temperatures are 0°F. or lower, CP Multi-Cylinder Booster Systems offer decisive advantages.

With CP Type "K" Boosters and 2nd stage Compressors, both units work within their most efficient range. Compression ratios are lower; the 2nd stage compressor runs cooler, under easier load. Units last longer, horsepower requirements are reduced.

You'll get the benefit of all of CP's experience in this new, cost-cutting refrigeration development when you specify CP Type "K" Boosters and Compressors for your refrigeration system. Send for information.

THE Creamery Package MFG. COMPANY

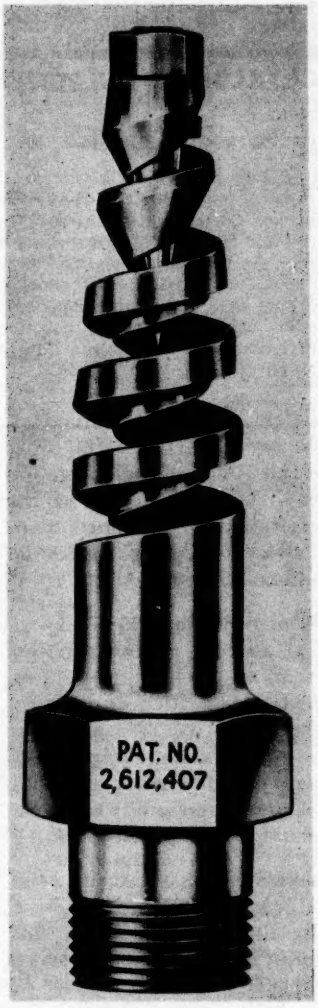
General and Export Offices: 1243 W. Washington Blvd., Chicago 7, Illinois

Creamery Package Mfg. Co. of Canada, Ltd.—Toronto

New and Improved Equipment

Bete Spiral Nozzles

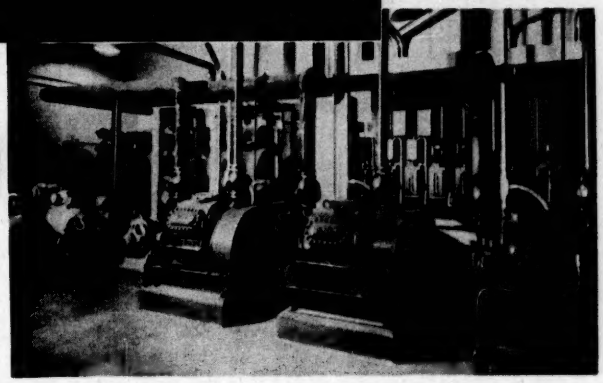
A patent has been issued to Bete Fog Nozzle Inc., of Greenfield, Mass., covering its line of improved spiral fog nozzles. Higher efficiency combined with non-clogging performance are claimed for the new nozzles whose features are disclosed in U. S. Patent No. 2,612,407. As with earlier models, the spiral element shears a continuous film of liquid from a solid jet to form a fine fog of uniform drop size.



New Spiral Fog Nozzle.

The Bete company is now manufacturing 47 different models of the spiral nozzles in flow rates from 1 to 1000 gpm for fire protection, chemical processing, humidifying, washing, cooling, treating gases and many other industrial applications.

In the Morris Harvey College Main Building... It's VILTER Again



During the past decade, Morris Harvey College, on the Kanawa River at South Ruffner, West Virginia, has grown from a small rural college to the third largest of its kind in the State. Recently completed is Morris Harvey's new Main Building—"six buildings in one." This new fireproof building boasts complete air conditioning and sound proofing, as well as every modern teaching facility. Refrigeration, of course, was by Vilter.

Three Vilter six-cylinder VMC Freon compressors provide over 150 tons of refrigeration for the air conditioning system. Two Vilter indoor evaporative condensers mean big water savings. A Vilter copper tube water cooler chills the water circulated through the cooling coils.

Whether it's cooling for comfort, for worker (or student) efficiency, or for process in your plant, Vilter refrigeration can help you. A Vilter installation means more than dependable, economical cooling . . . it's an installation that is engineered to fit your problems exactly.

WRITE FOR BULLETINS 120, 220, 110, 009

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Air Conditioning • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Double Pipe Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pakicers • Pipe Coils • Valves & Fittings

Conversion Kit For Wood Pallets

A new materials handling product, the "Dubl-Duty" Pallet Stacker Conversion Kit, has been introduced by the Elizabeth Iron Works, Inc., Elizabeth, N. J. Using the "Dubl-Duty" Kit, any standard wood pallet can be changed into a tiering pallet for safe storage of crushable, fragile or irregular-shaped merchandise.

Construction details of Dubl-Duty pallet stacker conversion kit.

Each pallet kit contains four tiering attachments and standards, nuts and bolts. The tiering attachments fit on the ends of the pallet stringers and are secured in place with bolts. Standards come in a variety of interchangeable deck storage heights from 24 to 48 inches. Attachments are flush with and outside of deck area, leaving full pallet deck surface for storage.

Self-aligning bearing plates on standards and tiering attachments prevent shifting and assure safe tiering. Key locks, in the bottoms of standards and in tiering units, secure the standards firmly in correct staking position.

The "Dubl-Duty" Kits are of all-steel, welded construction. According to the manufacturer, the kit unit capacity is 3,000 pounds. When not in use, the pallets, with standards removed, stack evenly for compact storage.

A simplified survey and specification sheet for the "Dubl-Duty" Conversion Kit is available by writing Elizabeth Iron Works, Inc., Box 360, Elizabeth, N. J.

Folder on Driers

A FOLDER on the new line of Henry Driers has been issued by the Henry Valve Co., Melrose Park, Ill. Description and characteristics of the new equipment are given, along with size connections.

MANUFACTURERS' NEWS

THE following ice companies installed S & S Vending Equipment during the month of November:

Geo. Hugins Ice Service (two units) Gering, Nebr.

Ice Products, Inc. (three units) Stubenville, Ohio.

Indianapolis Ice & Fuel Co. (two units) Indianapolis, Ind.

Mutual Ice Co. (five units) Alexandria, Va.

The home office at San Jose, Calif. reports as of December 1, 1952, the largest order backlog on hand ever held on this date and that stepped up production will continue for the following five months.

CATALOGS AND BULLETINS

Brochure on Tube Ice

A NEW four-color brochure has been issued by The Henry Vogt Machine Co. covering the large custom built Tube-Ice Machine units designed for the commercial production of sized ice. Illustrations show the working details and installations for various uses, and some of the important advantages of this machine are pointed out.

The Book of Refrigeration Knowledge

Basic Refrigeration

PRINCIPLES
PRACTICE
OPERATION

By GUY R. KING
Refrigeration Instructor
Santa Monica Vocational School

THE 29 chapters of this 500-page book contain a complete and simplified presentation of the fundamentals of refrigeration, giving equal treatment to all common refrigerants, design, operation and servicing of the apparatus and systems.

The author has drawn on a wide and varied experience in the practical aspects of refrigeration, coupled with many years of teaching the subject. BASIC REFRIGERATION is written in non-technical language and the author has recognized the requirements of the refrigeration engineer, installer, salesman, student and instructor, compiling the text in a manner which progressively treats the subject from fundamentals to complete systems.

The text is supplemented by an unusually large number of excellent illustrations, (348). All basic points are graphically illustrated in a way that creates additional interest for the reader and assists him to gain a full understanding.

Numerous example problems are given along with a step by step solution. Each chapter is followed by a good group of questions.

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433 N. Waller Ave., Chicago 44, Ill.

THE BUYERS DIRECTORY

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AIR COMPRESSORS
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AIR CONDITIONING EQUIPMENT
Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N. Y.
Vilter Mfg. Co., Milwaukee, Wis.

AMMONIA COMPRESSOR VALVES
Frick Co., Waynesboro, Pa.
Vilter Mfg. Co., Milwaukee, Wis.

AMMONIA COMPRESSORS
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Enterprise Equipment Corp., Yonkers, N. Y.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., West Englewood, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

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AMMONIA FLOAT VALVES
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Frick Co., Waynesvoro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

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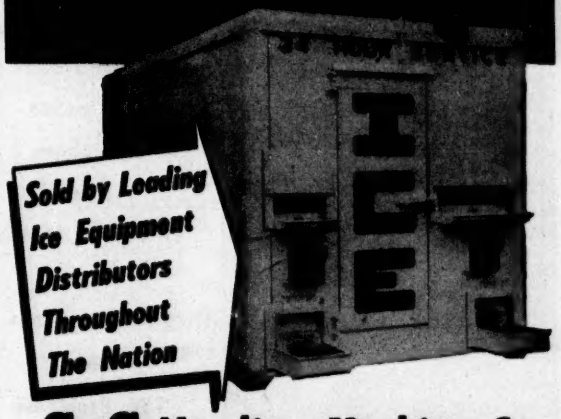

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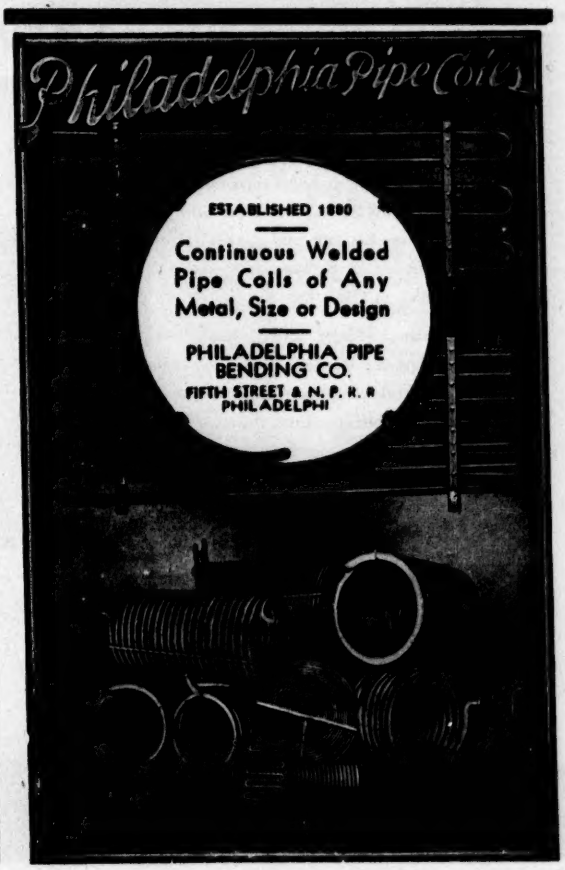
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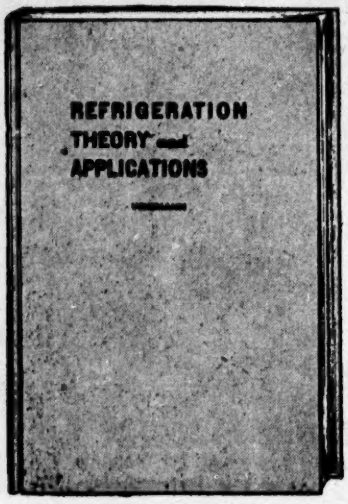

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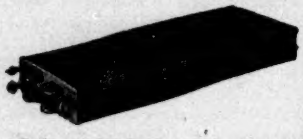

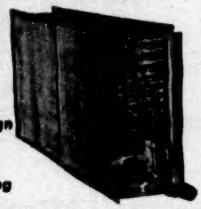

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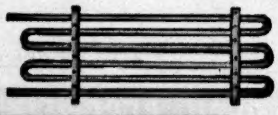

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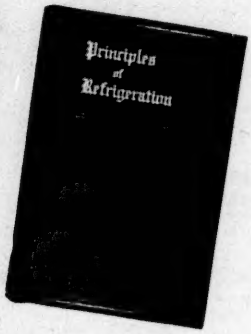

PRINCIPLES OF REFRIGERATION, 3rd Edition (1947) revised by Wm. H. Motz, provides information and data for the practicing refrigeration engineer. Of special interest to erecting and operating refrigerating engineers, refrigeration machinery sales engineers, persons employed in building refrigerating machinery and those employed in ice making, cold storage plants or other establishments equipped with refrigerating machinery. Contains information that the refrigerating engineer should know in order that he may have complete and up-to-date knowledge.

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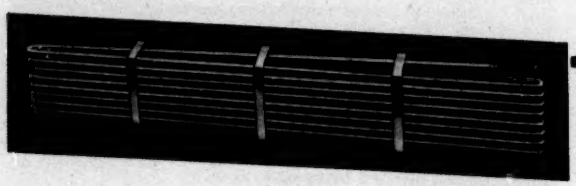

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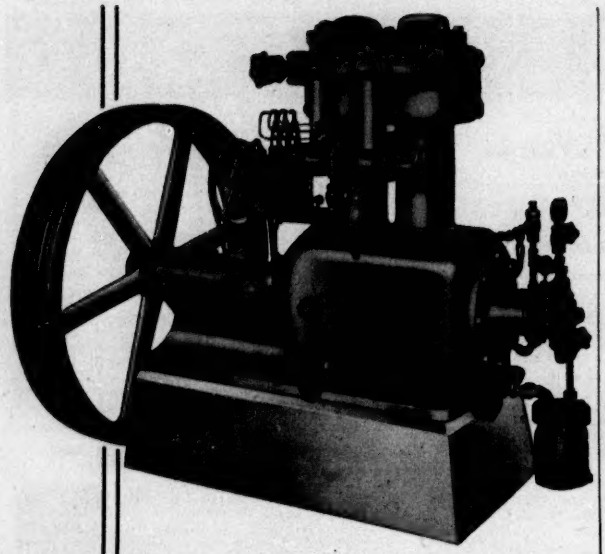

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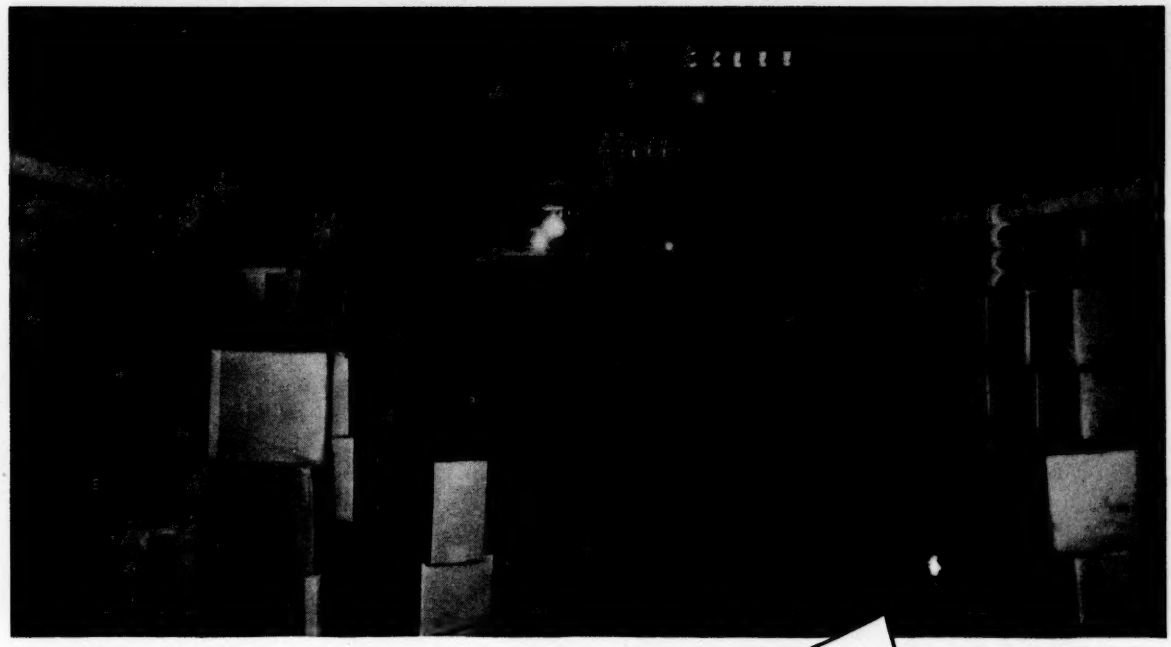
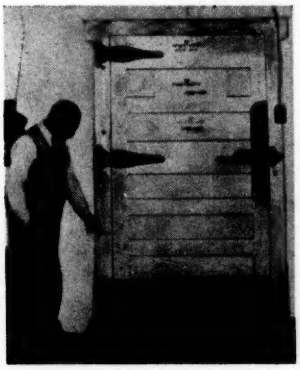


How long should cold-room insulation last?

There's no sure way to predict the life of low-temperature insulation, but one thing is sure. Armstrong's Corkboard, properly installed, will last a long, long time.

This butter storage room is proof of that. It was insulated in 1932 with 4" of Armstrong's Corkboard. Despite 21 years of continuous service, the insulation looks almost like new. It is still performing at peak efficiency, holding temperatures of 28° to 30° F. at remarkably low cost.



Even though a flood once inundated this basement room, the corkboard came through undamaged—proof of its outstanding moisture resistance. Mr. L. K. Heyd, of C. G. Heyd & Co., Philadelphia, shown here, pointing to the high-water mark says, "This room looks good for at least 20 years more. The insulation is doing a fine job. We know there is practically no air leakage, because the refrigeration coils hardly ever need defrosting."

Only top-quality materials, expertly applied, will give that kind of service. But when Armstrong's Corkboard is used, records like this one aren't unusual. Hundreds of Armstrong jobs are still giving excellent service after 20, 30, and even 40 years.

Call Armstrong whenever you need low-temperature insulation. Our contracting organization can take over the entire job for you and assure you an efficient, long-lasting installation. For further information, call your near-by Armstrong office or write Armstrong Cork Company, 4501 Concord Street, Lancaster, Pennsylvania.

Complete Insulation Contract Service

When you engage a contractor, you have a right to expect certain things that cannot be written into a proposal. These factors can largely determine whether or not the agreement will be entirely satisfactory. They include:

1. Financial responsibility – resources to complete the contract despite any unforeseen events.
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3. Technical ability – experience, plus technical and research staff to complete the work in accordance with best practices.
4. Manpower resources – trained supervisors and workmen able to handle any contract efficiently.
5. Efficiency – ability to handle accurately things like accounting, tax provisions, insurance, and workmen's compensation.

You get all these with an Armstrong Contract

ARMSTRONG'S INDUSTRIAL INSULATIONS

For temperatures from 300° below zero to 2800° F.

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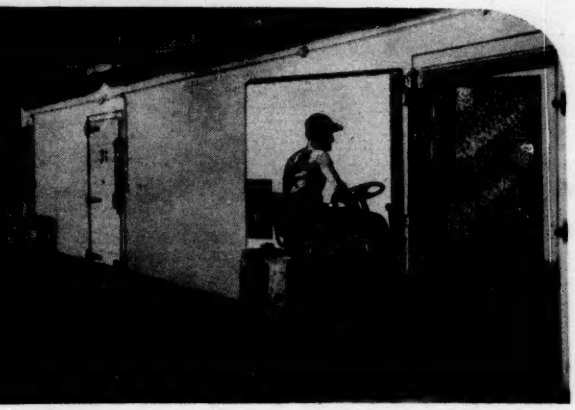
selected for
HARD USAGE



5'6" x 7'6" DOORS PROVIDE ADEQUATE CLEARANCE FOR ELECTRIC TRUCKS. Truck operator nudges door open without dismounting. Heavy No. 14 gauge galvanized sheet steel protects lower four feet of Vestibule Doors. Upper portion of doors is protected by No. 20 gauge steel.

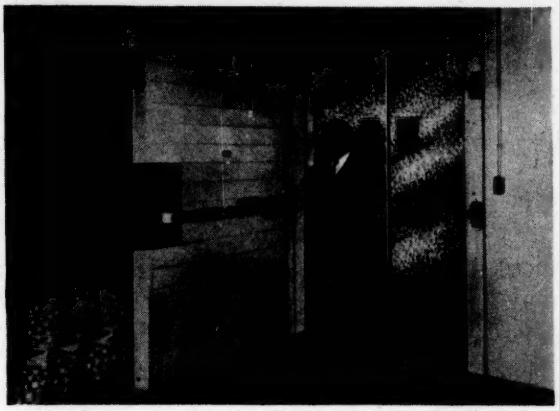
Associated Grocers of Oklahoma make selection after detailed study

Every grocery distributor recognizes the importance of speed in handling perishables. And every warehouse manager knows too that speed in a warehouse can result in high maintenance and operating costs of cold storage rooms.

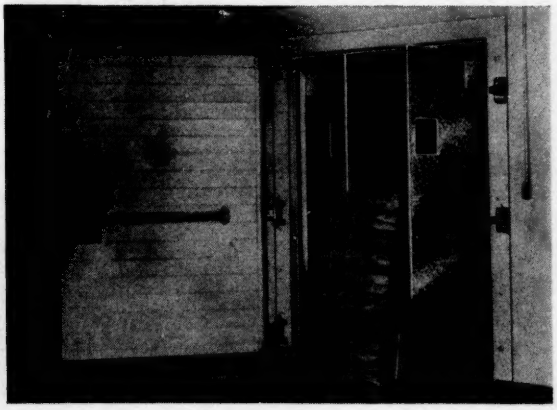
To make sure their cold storage rooms operated at maximum efficiency, the Associated Grocers of Oklahoma made a detailed study of all types of doors before making a final selection. Jamison Doors were selected because:

1. Jamison Cold Storage Doors provide highest sealing efficiency available anywhere.
2. Jamison Vestibule Doors insure a minimum escape of cold air from rooms during in-and-out traffic.
3. Construction of Jamison Cold Storage Vestibule Doors provides maximum protection against rough usage by materials handling equipment.

Jamison Doors invite and challenge comparison. Compare the construction features of these doors yourself. Write today for catalog. JAMISON COLD STORAGE DOOR CO., HAGERSTOWN, MD., U.S.A.



BUMP OPEN BAR OPENS COLD STORAGE DOOR FROM INSIDE. A push on the vestibule door from the inside contacts the bump open bar. As bar is depressed, fastener releases hold on door. Doors can be opened from inside without manually operating the fastener. Mr. M. Rabinowitz, Gen. Mgr. of Associated Grocers, points to Bump Open Bar.



HEAVY COLD ROLLED STEEL SHAFT SUPPORTS DOORS FROM TOP TO BASE. A two-way gravity cam automatically closes batten doors, keeping loss of cold air at a minimum during in-and-out traffic.

JAMISON
HAGERSTOWN, MARYLAND, U. S. A.

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